ALLEN
SHOP EQUIPMENT

FOR

MOTOR TUNE-UP

BATTERY TESTING

BATTERY CHARGING

ELECTRICAL SERVICE

SPOT AND ARC WELDING

• ● •

PRODUCTS TO FIT THE REQUIREMENTS
OF ALL TYPES OF SERVICE STATIONS

Allen Electric and Equipment Company
Kalamazoo, Michigan, U. S. A.

DEALER NET PRICE LIST-EAST

EAST OF THE STATES OF MONT., WYO., COLO., N. M. AND EL PASO, TEX.

EFFECTIVE OCT. 1, 1938

This Price List supersedes all previous prices, is subject to change without notice

BUY
PROFIT PRODUCING ALLEN EQUIPMENT FROM YOUR JOBBER
ON
EASY MONTHLY PAYMENTS

ALLEN PRODUCTS

Model No.	(√)	Voltage	Cycle	H.P.	Price
E-1	15	220	50 or 60		$ 60.00
E-2	16	110 or 220	" " "		90.00
E-2	16	" " "	25, 30 or 40		110.00
E-6	15	220	50 or 60		45.00
E-7	16	110	" " "		66.00
E-7	16	220	" " "		79.00
E-7	16	110	25, 30 or 40		76.00
E-8	15	"	50 or 60		34.50
E-8	15	"	25, 30 or 40		40.50
E-10	27A				7.00
E-15	15	110	50 or 60		39.50
E-15	15	"	25, 30 or 40		45.50
§E-17		"	50 or 60		11.00
E-18	27A				8.00
E-22	24A				5.70
E-29	27A				8.00
E-30	9	110	50 or 60		15.00
E-31	9	"	" " "		12.50
E-31	9	110 or 230	D.C.		52.00
E-32	9	110	50 or 60		34.50
E-33	9	"	" " "		8.50
E-35	9	"	" " "		22.00
For Double Coil Winding Add $5.50 to Above Growler Prices					
For Other Voltage or Cycle Add $1.50 to Above Growler Prices					
E-36	10	6	D.C.		24.00
E-36	10	110 or 230	D.C.		31.00
E-51	17				4.95
E-51-B	17				9.25
E-79	20				.95
§E-83		110	50 or 60		12.00
§E-83		"	25		15.00
§E-83		220	50 or 60		15.00
E-91	27A				21.00
E-93	27A	110	50 or 60		25.95
E-93	27A	"	25		28.95
E-93	27A	220	50 or 60		28.95
E-99	20				.50
E-109	10	110	A.C. or DC.		30.50
†E-114	7	110 or 220	60	¾	342.50
†E-114	7	" " "	25 or 50	¾	362.50
†E-114	7	" " "	60	1½	388.50
†E-114	7	" " "	25 or 50	"	414.00
†E-114	7	" " "	60	2½	498.50
†E-114	7	" " "	25 or 50	"	526.00
E-116	8	" " "	60	¾	275.00

ALLEN PRODUCTS

Model No.	(√)	Voltage	Cycle	H.P.	Price
E-116	8	110 or 220	25 or 50	¾	290.00
E-116	8	" " "	60	1½	326.50
E-116	8	" " "	25 or 50	"	352.00
E-116	8	" " "	60	2½	436.50
E-116	8	" " "	25 or 50	"	465.00
†E-117	7	" " "	60	¾	379.50
†E-117	7	" " "	25 or 50	"	400.00
†E-117	7	" " "	60	1½	426.00
†E-117	7	" " "	25 or 50	"	451.50
†E-117	7	" " "	60	2½	536.00
†E-117	7	" " "	25 or 50	"	563.50
E-118	8	" " "	60	¾	234.00
E-118	8	" " "	25 or 50	"	249.50
E-118	8	" " "	60	1½	286.00
E-118	8	" " "	25 or 50	"	311.50
E-118	8	" " "	60	2½	396.50
E-118	8	" " "	25 or 50	"	423.50
E-125	13A	110	50 or 60		91.00
E-125	13A	"	25		94.00
E-126	13A				82.00
E-127	13A	110	50 or 60		80.50
E-127	13A	"	25		83.50
E-128	13A				71.50
E-129	13A				10.50
E-134		110	50 or 60		258.00
E-135		"	" " "		270.00
For 110 Volt 25 Cycle Add $12.50 to Above Syncrograph Prices					
For 220 Volt 60 Cycle Add $12.50 to Above Syncrograph Prices					
For 110 or 230 Volt D.C. Add $15 to Above Syncrograph Prices					
°E-136	17A	110	50 or 60		175.00
°E-137	17A	"	" " "		159.00
For 110 Volt 25 Cycle Add $9.50 to Above Syncrograph Prices					
For 220 Volt 60 Cycle Add $4.00 to Above Syncrograph Prices					
E-138	17A				16.00
E-142	21				67.50
E-143	22				47.50
E-145	23A				33.50
E-146	23A				23.75
E-147	23A				7.50
E-160		110	Any		9.80
E-166		"	50 or 60		245.00
E-167		"	" " "		253.00
E-180	19				33.50
E-181	19				42.00
E-182	19				8.50

† If the complete shop is not desired, deduct from total price; 90% of the price of the product or products omitted.

‡ Three Phase. (All other products furnished in single phase only.) § Subject to Prior Sale.

(√) No. refers to catalog page number on which product is described.

° Deduct $5.00 from E-136 and E-137 prices if adapters for testing and timing Ford V-8 and Lincoln are Not Desired.

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

FORM NO. 245

ALLEN PRODUCTS

Model No.	(√)	Voltage	Cycle	H.P.	Price
E-190	26A	110	50 or 60		29.00
E-190	26A	220	" " "		30.00
E-190	23A	6	D.C.		29.00
E-191	30A	110	50 or 60		53.00
E-191	30A	220	" " "		56.00
E-192	24A				39.50
E-193	24A	110	50 or 60		55.00
E-193	24A	220	" " "		58.00
E-194	25A	110	" " "		41.00
E-194	25A	220	" " "		44.00
E-195	7A				15.50
E-196	3A				27.50
E-197	3A				22.50
E-198	4A				1.00
E-199	25A	110	50 or 60		31.50
E-199	25A	220	" " "		34.50
*E-200	5A	110	" " "		316.50
*E-200	5A	220	" " "		325.50
*E-201	5A	110	" " "		274.00
*E-201	5A	220	" " "		284.00
*E-202	5A	110	" " "		246.00
*E-202	5A	220	" " "		255.00
*E-203	5A	110	" " "		250.50
*E-203	5A	220	" " "		259.50
*E-204	5A				34.50
E-207	10A	110	50 or 60		124.50
E-207	10A	220	" " "		127.50
E-207	10A	110	25		127.50
E-208	29A	110	50 or 60		44.50
E-208	29A	220	" " "		47.50
E-208	29A	6-12	D.C.		49.50
E-209	29A	110	50 or 60		44.50
E-209	29A	220	" " "		47.50
E-209	29A	6-12	D.C.		49.50
E-240	1	110 or 220	50 or 60	1½	600.00
E-240	1	" " "	25	"	660.00
‡E-240	1	220 or 440	50 or 60	"	585.00
‡E-240	1	" " "	25	"	645.00
E-240	1	115 or 230	D.C.	"	705.00
E-240	1	110 or 220	50 or 60	2	640.00
E-240	1	" " "	25	"	710.00
‡E-240	1	220 or 440	50 or 60	"	600.00
‡E-240	1	" " "	25	"	660.00
E-240	1	115 or 230	D.C.	"	780.00
E-240	1	110 or 220	50 or 60	3	690.00
E-240	1	" " "	25	"	770.00
‡E-240	1	220 or 440	50 or 60	"	625.00
‡E-240	1	" " "	25	"	695.00
E-240	1	110 or 220	50 or 60	4	750.00
‡E-240	1	220 or 440	" " "	"	665.00
E-245	2				27.50
E-246	2				25.00
E-270	11	220	50 or 60		220.00
E-270	11	440	" " "		228.00
§E-271	11	220	" " "		180.00
§E-271	11	440	" " "		186.50
E-272	11	220	" " "		135.00
E-272	11	440	" " "		140.00
E-273	11	220	" " "		165.00
E-273	11	440	" " "		171.50
E-279	11				19.50
E-296	5	220	50 or 60		255.00
E-296	5	440	" " "		270.00
E-298	5	220	" " "		137.00
E-298	5	440	" " "		145.50
E-299	5	220	" " "		193.50
E-299	5	440	" " "		205.50
E-320	11A	110	" " "		286.00
E-321	11A	"	" " "		278.00
E-330	22A				65.50
E-331	21A				160.00
E-400	1A	110	50 or 60		331.50
E-400	1A	220	" " "		340.50
E-401	1A	110	" " "		289.00
E-401	1A	220	" " "		299.00

ALLEN PRODUCTS

Model No.	(√)	Voltage	Cycle	H.P.	Price
E-402	1A	110	50 or 60		261.00
E-402	1A	220	" " "		270.00
E-403	1A	110	" " "		295.00
E-403	1A	"	25		299.00
E-403	1A	220	50 or 60		299.00
E-404	1A	110	" " "		224.50
E-404	1A	"	25		228.50
E-404	1A	220	50 or 60		228.50
E-405	1A	110	" " "		196.50
E-405	1A	"	25		199.50
E-405	1A	220	50 or 60		199.50
E-406	1A	110	" " "		335.00
E-406	1A	220	" " "		344.00
E-407	1A	110	" " "		292.50
E-407	1A	220	" " "		302.50
E-408	1A	110	" " "		319.50
E-408	1A	220	" " "		326.50
E-409	1A	110	" " "		273.00
E-409	1A	"	25		282.00
E-409	1A	220	50 or 60		280.00
E-410	1A	110	" " "		315.50
E-410	1A	"	25		323.50
E-410	1A	220	50 or 60		321.50
E-411	1A	110	" " "		245.00
E-411	1A	"	25		253.00
E-411	1A	220	50 or 60		251.00
E-420	1A				42.50
E-425	9A				38.50
E-426	9A	110	50 or 60		163.00
E-426	9A	"	25		166.00
E-427	9A	"	50 or 60		171.50
E-427	9A	"	25		174.50
F-1	23				3.60
F-2	23				3.60
F-14	20				.15
F-59	19				6.75
F-60	23				4.00
F-111	18	110	50 or 60		32.00
F-111	18	220	" " "		42.50
F-112	18	110	" " "		42.75
F-112	18	220	" " "		55.25
F-115	18	110	" " "		56.00
F-115	18	220	" " "		76.00
For 25, 30 or 40 Cycle Add $7.00 to F-111, F-112 and F-115 110 Volt Prices. Not Supplied in Odd Cycles for 220 Volt.					
F-150	17	110	50 or 60		120.75
F-150	17	220	" " "		140.75
For 25, 30 or 40 Cycles Add $7.00 to Above F-150 110 Volt Prices. Not Supplied in Odd Cycles for 220 Volt.					
G-3	28A				2.90
G-4	28A				6.50
G-7	26A				35.00
G-8	28A				8.50
G-9	28A				7.75
G-30	19A				121.50
G-31	20A				91.00
G-32	20A				71.50
G-33	20A				5.00
G-34	20A				87.25
G-46	20A				101.00
G-47	20A				29.00
H-5	10				7.00
H-6	10				2.50
H-7	10				2.50
H-9	10				3.75
P-5-A	10				7.50
P-6	10				22.50
W-1	5				2.80
W-2	5				1.80
W-3	5				1.60
W-4	5				2.60
W-5	5				1.60
W-6	5				2.00
W-7	5				1.60
Standard Auto-Electrician 5-Year Manual 2A					14.50

* Two Panel Lights mounted at top of cabinet to illuminate panels of Individual Testers—$8.00 additional. Bulbs not supplied.
(√) No. refers to catalog page number on which product is described.
‡ Three Phase. (All other products furnished in single phase only.)
§ Subject to Prior Sale. D.C. to A.C. Converter for E-200 or E-400 Series Testers—$60.00.

Allen Electric and Equipment Company

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ALLEN ELECTRIC & EQUIPMENT COMPANY
KALAMAZOO, MICHIGAN, U. S. A.

Form No. 76 Printed in U.S.A. 8-1-38

ALLEN CODE FOR TELEGRAMS

The Allen Telegraphic Code is supplied for the purpose of reducing your cost of telegrams. Please note from the following example how it is to be used.

EXAMPLE:—The following communication—"Ship via freight one each E-401 Motor Tester, G-30 Combustion Analyzer, E-136 Syncrograph. 110 volt, 50 cycle. Our Sales Meeting is being held on May first"—can be reduced to 10 words, with the use of the code, to read—"Bard one each delak, dorr, duban, car, balm, May first".

EXPLANATION:—The message is easily translated, as by referring to the Code it will be seen that "Bard" is the code word for "Ship via freight"; "Delak" is the code word for "E-401 Motor Tester", etc.

GENERAL—

band — when can you ship?
bail — rush via express
bard — ship via freight
base — ship via parcel post
beat — ship at once best way
bean — make shipment C.O.D.
best — mailing check for past due account
bird — check for past due account in mail
bare — until further notice hold our order
bate — ship direct to our customer the following
bole — imprint advertising material as follows
bomo — customer's clinic starts on
born — include advertising material for our clinic
balm — our sales meeting is being held on
bung — please inform your representative.

VOLTAGES AND CYCLES—PHASES

cab — 110 volt, 25 cycle
cam — 110 volt, 30-40 "
car — 110 volt, 50 cycle
cen — 110 volt, 60 cycle
cir — 220 volt, 25 cycle
cot — 220 volt, 30-40 "
cow — 220 volt, 50 cycle
cud — 220 volt, 60 cycle
col — 440 volt, 25 cycle
cur — 440 volt, 50 cycle
cil — 440 volt, 60 cycle
mow — single phase
mub — two phase
mad — three phase

LARGE TUNE-UP EQUIPMENT—

dubb — E-134 Syncrograph
dubby — E-135 Syncrograph
duban — E-136 Syncrograph
doker — E-137 Syncrograph
derek — E-138 Syncrograph Cabinet
deron — E-200 Motor Tester
daten — E-201 Motor Tester
dumer — E-202 Motor Tester
dobir — E-203 Motor Tester
den — E-204 Motor Tester Cabinet
dak — E-205 Motor Tester Top Panel
dorma — E-207 Motor Tester
drake — E-208 Electric Tachometer
domat — E-320 Motor Tuner
dalem — E-321 Motor Tuner
doben — E-330 Fuel-Om-Eter
dalot — E-331 Mileage Analyzer
decam — E-400 Motor Tester
delak — E-401 Motor Tester
dakol — E-402 Motor Tester
depar — E-403 Motor Tester
dolab — E-404 Motor Tester
dokot — E-405 Motor Tester
dupet — E-406 Motor Tester
dimti — E-407 Motor Tester
dasim — E-408 Motor Tester
dread — E-409 Motor Tester
drool — E-410 Motor Tester
dabat — E-411 Motor Tester
dosak — E-420 Motor Tester Cabinet
dopas — E-425 Motor Tuner Cabinet
ditho — E-426 Motor Tuner
dedio — E-427 Motor Tuner
dorr — G-30 Combustion Analyzer
dorry — G-31 Combustion Analyzer
dibal — G-32 Combustion Analyzer
duy — G-33 Carrying Case for G-31
dosel — G-34 Combustion Analyzer
ditom — G-35 Cabinet Stand for G-32
dulak — G-46 Comb. Analyzer
dakyr — G-47 Comb. Analyzer Cabinet
dob — Replacement Combustion Analyzer Cell Assembly
staman— Standard Auto Electrician's Manual

ARC WELDERS—

arcom — E-270 Welder
arlab — E-271 Welder
armar — E-272 Welder
arkal — E-273 Welder
arker — E-279 Arc Welder Cabinet
arste — Welding Electrodes for Steel
ariro — Welding Electrodes for Cast Iron
arant — Welding Electrodes for Stainless Steel
arhed — Welding Head Shield
arhan — Welding Hand Shield
spow — E-296 Spot and Arc Welder
stas — E-298 Spot Welder
shed — E-299 Spot and Arc Welder
Order Tongs as "Tongs 1, 4, 6, etc."

SMALL TUNE-UP EQUIPMENT—

gar — E-10 Synchronizer
earn — E-18 High Tension Tester
ebon — E-22 Neon Timing Light
elit — E-29 Rheostat
ebal — E-91 Volt-Amp Tester
edge — E-93 Motor Tester
etar — E-145 Coil Tester
elos — E-146 Coil Tester
eke — E-147 Stand
ebat — E-190 Contact Angle Tester
esad — E-191 Condenser Tester
emor — E-192 Volt-Amp Tester
emat — E-193 Coil Tester
emis — E-194 Spark Plug Tester
epal — E-195 Vac & H.T. Tester
erdo — E-196 Vac.-Comp. & H.T. Tester
etho — Vacuum and H.T. Tester
elod — E-198 Panel only for E-200 Series
efad — E-199 Spark Plug Tester
espe — G-3 Spring Tension Tester
epod — G-4 Compression Tester
ekad — G-7 Performance Indicator
epic — G-8 Vacuum & Fuel Pump Tester
ekom — G-9 Set Adapters

ELECTRICAL SERVICE EQUIPMENT—

SPECIFY VOLTAGE, CYCLE AND PHASE WHERE NECESSARY

gar — E-10 Synchronizer
gem — E-30 Growler
gin — E-31 Growler
gut — E-32 Growler
gum — E-33 Growler
gas — E-35 Growler
gal — E-36 Magnetizer
fern — E-109 Mica Undercutter
foam — E-114 Universal Test Bench
fame — E-116 Universal Test Bench
fall — E-117 Electric Shop
fiel — E-118 Electric Shop
fapo — E-240 Electrical Laboratory
fit — E-245 Magneto Reduction Drive
fog — E-246 9-Point Adjustable Spark Gap
gid — P-5-A Puller Plate
gor — P-6 Puller press

MOTORS FOR TEST STANDS—

feo — with ¾ HP motor
fla — with 1½ HP motor
fom — with 2 HP motor
fir — with 2½ HP motor
fun — with 3 HP motor
fat — with 4 HP motor

SPECIFY VOLTAGE CYCLE AND PHASE

NOTE: Be sure to specify voltage and cycle required when ordering above. See also "Voltages and Cycles".

BATTERY SERVICE EQUIPMENT

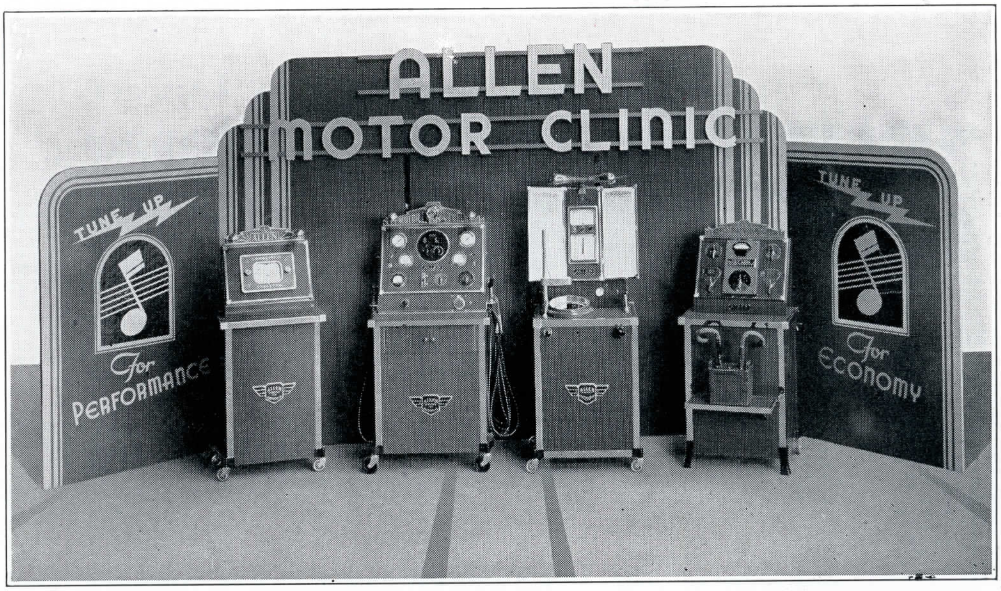
SPECIFY VOLTAGE AND CYCLE

hoal — E-1 Unitron Battery Charger
hato — E-2 Unitron Battery Charger
humo — E-6 Unitron Battery Charger
hefi — E-7 Unitron Battery Charger
heme — E-8 Unitron Battery Charger
hero — E-15 Unitron Battery Charger
kale — E-51 Cell Tester
kola — E-51-B Cell Tester
kone — E-79 Battery Post Cleaner
kine — E-99 Battery Carrier
klon — E-142 Battery Analyzer
klar — E-143 Battery Analyzer
klak — E-180 Portostat
klep — E-181 Portostat on Stand
klot — E-182 Stand for Portostat
kelp — F-1 Unitron Bulb
kepo — F-2 Unitron Bulb
kalb — F-13 Battery Terminal Remover
kilt — F-14 Battery Pin Connector
klab — F-59 Volt-Amp Master Clips
kore — F-60 Unitron Charger Bulbs
heft — F-111 Battery Shop
heir — F-112 Battery Shop
hoot — F-115 Battery Shop
mon — F-150 Battery Shop

Allen Advertising Material Price List

Tune-Up Display Background

Showmanship in the tune-up department is important and productive. An attractive layout adds new customers, increases service sales, and proves your progressiveness. The background shown at the right, which is available to Owners of Allen Equipment at Allen's cost will add materially to the appearance of your service facilities. Masonite reinforced with a wood frame makes the background sturdy and durable. It cannot warp or become easily damaged.



The colors are washable blue and orange, and the 10″ cut-out silver letters can be ordered in any wording desired. Examples: "Smith's Super Service"—"Jones Motor Analysis". **Specify wording when ordering.** The main section is 8′ high and 12′ long with hinge mounted 4′ long adjustable wings at each end. Over-all length is 20′. It is packed knocked down in two crates, the total shipping weight of which is 308 lbs. Installation is easy, requiring approximately 30 minutes. Complete instructions are furnished.

Net Price No. 60 Background..........$38.50 F. O. B. Kalamazoo. 10″ Silver Letters 20c each additional. Dealer shipments C. O. D.

Car Owner Clinic

A two day car owner clinic, to immediately follow one day FREE instructional service extended purchasers of the Motor Tester or Motor Tuner can be arranged at a cost of $30.00 additional.

Advertising Material for All Machines

Two-color Post Cards; imprinted; specify the Model Number and Name of the Motor Tuner, Motor Tester, Syncrograph or Combustion Analyzer. Minimum Quantity 500, Price $3.50. Each additional 500	$3.00
Service Credit Memo Cards—Minimum Quantity 100—100 for .35	Quantity of 500 for $1.50
Three-color Fibre Board Pennants—(see description next page) 7 on 21 foot rope	per string $2.75
Four-color Cloth Pennants—twelve to string	per string $1.00
Inspection Reports, size 8½″x11″, 100 to a pad, Minimum Quantity 500	5 pads for $2.00 10 pads for $3.00
Appointment Cards; Imprinted (Minimum Quantity 100)	100 for .50c, 500 for $2.00
No. 1 Three-color Cloth Banner—Size 36″ wide 54″ long	each, $1.25
No. 2 Three-color Cloth Banner—Size 36″ wide, 108″ long	each $2.50
No. 3 Three-color (Red, Black, Yellow) Enameled Drill Banner—27″ wide, 120″ long	each $3.75
No. 4 Three-color Enameled Drill Banner—Size 36″ wide, 60″ long. For Syncrograph Only	$2.00
No. 5 Three-color Enameled Drill Banner—Size 36″ wide, 60″ long. For Combustion Analyzer Only	$2.00
Two-color Syncrograph Envelope Stuffers—Imprinted	500 for $4.00
(Minimum Quantity 500)	Each additional 500 $3.50

Newspaper Mats

Motor Tester—E-200, 1 col. wide, 3¼″ high. E-400, 1 col. wide, 2¾″ high. 2 col. wide, 5½″ high	each	$ .20
Motor-Tuner—Two sizes; 1 col. 3½″, 2 col. 7″	each	.20
Syncrograph—E-135, Two sizes; 1 col. 4″, 2 col. 8″. E-136, 1 col. wide 4″ high	each	.20
Combustion Analyzer—G-30, Two sizes; Nearly 1 col. 3″, Slightly over 1 col. 6″. G-46, 1 col. 4½″ high	each	.20

SUGGESTED GROUPS OF ADVERTISING MATERIAL

Assortment No. 1, E-320 Motor-Tuner—$10.75

Consists of the following: 500 Post Cards, imprinted; 2 Strings Pennants (1 String Cloth and 1 String Fibre Board); 1 No. 1 Banner; 2 Newspaper Mats, one of each size; 500 Inspection Reports.

Assortment No 2, for E-200 or E-400 Motor Tester—$10.55

Consists of the following: 500 Post Cards, imprinted; 2 Strings Pennants (1 String Cloth and 1 String Fibre Board); 1 No. 1 Banner; 1 Newspaper Mat, 500 Inspection Reports.

Assortment No. 7, for Syncrograph—$9.90

Consists of the following: 500 Post Cards, 500 Envelope Stuffers, 1 No. 4 Banner, 2 Newspaper Mats.

Assortment No. 9, for Combustion Analyzer—$5.90

Consists of the following: 500 Post Cards, imprinted; 2 Newspaper Mats and 1 No. 5 Banner.

Assortment No. 10 for Complete Installation—$40.00

Consists of 500 each Syncrograph, Motor Tester and Combustion Analyzer Post Cards, imprinted; 3 Newspaper Mats (specify kind and size desired); 500 Syncrograph Envelope Stuffers; four Strings of Pennants (2 Strings Cloth and 2 Strings Fibre Board); one each No. 2, No. 3, No. 4, and No. 5 Banners; 1,000 Inspection Reports, and 100 Service Credit Cards.

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

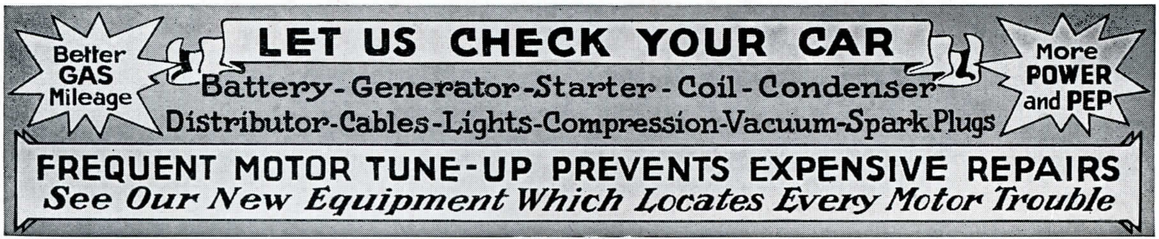
Printed in U.S.A. 1-15-38. Form No. 76

Supersedes all Adv. Material Price Lists Printed Previous to 1-15-38.

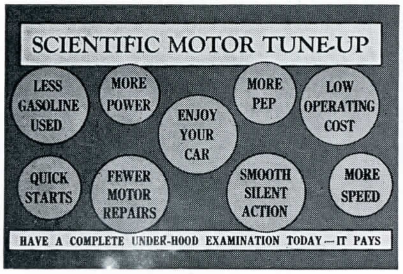
ADVERTISING AND MERCHANDISING HELPS

Advertising a Tune-Up Department is important and productive. The materials listed on the opposite page and illustrated below are furnished at cost. It PAYS to have these helps and to USE THEM.

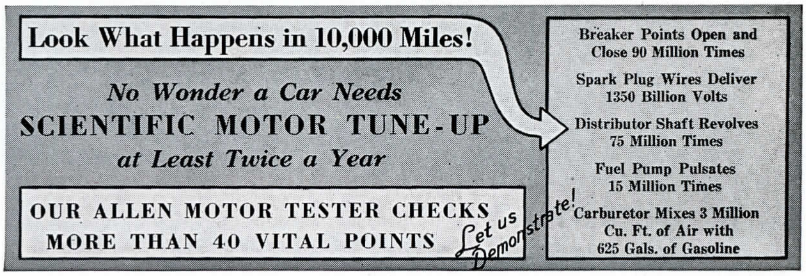
Three - Color Shop Display Banners


Better GAS Mileage
LET US CHECK YOUR CAR
Battery-Generator-Starter-Coil-Condenser
Distributor-Cables-Lights-Compression-Vacuum-Spark Plugs
More POWER and PEP
FREQUENT MOTOR TUNE-UP PREVENTS EXPENSIVE REPAIRS
See Our New Equipment Which Locates Every Motor Trouble

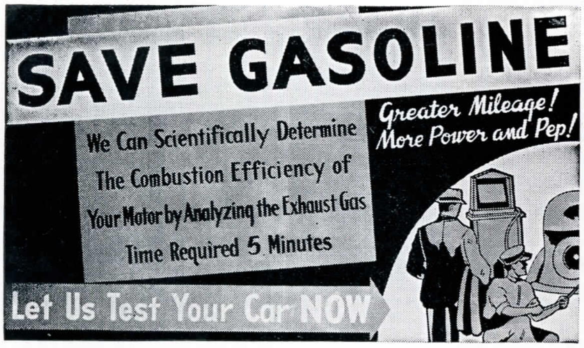
Banner No. 3



Banner No. 1

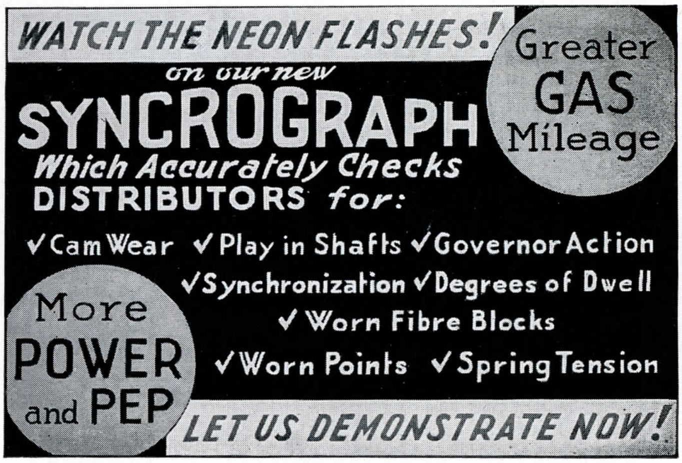

Look What Happens in 10,000 Miles!
No Wonder a Car Needs
SCIENTIFIC MOTOR TUNE-UP
at Least Twice a Year
OUR ALLEN MOTOR TESTER CHECKS
MORE THAN 40 VITAL POINTS
Let us Demonstrate!
Breaker Points Open and Close 90 Million Times
Spark Plug Wires Deliver 1350 Billion Volts
Distributor Shaft Revolves 75 Million Times
Fuel Pump Pulsates 15 Million Times
Carburetor Mixes 3 Million Cu. Ft. of Air with 625 Gals. of Gasoline

Banner No. 2


SAVE GASOLINE
We Can Scientifically Determine The Combustion Efficiency of Your Motor by Analyzing the Exhaust Gas
Time Required 5 Minutes
Greater Mileage! More Power and Pep!
Let Us Test Your Car NOW

Banner No. 5

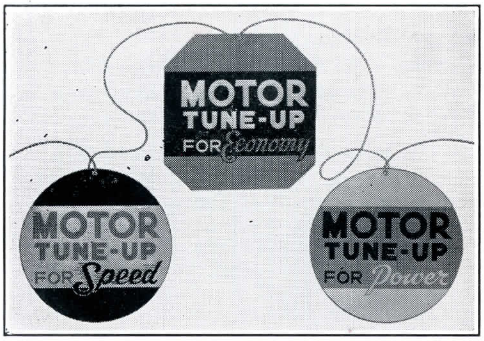
The banners illustrated on this page attract favorable car owner attention. They should be prominently displayed in every Allen Equipped Service Station. For sizes see reverse side of this page.



Banner No. 4

Envelope Stuffers - Post Cards - Appointment - Service Credit Cards

- Pennants -



PENNANTS—Fibre board construction, lacquer protection for long usage. 18″ diameter. Bright red, black and yellow. Seven pennants to 21 foot string. Alternate round (4) and octagon (3). See illustration for wording on pennants.

POST CARDS—Use the mails to inform car owners of your tune-up service facilities. Two-color cards measure 7″ x 4¼″ and illustrate the equipment you are using. Printed with your name and address. Specify name and model when ordering.

APPOINTMENT CARDS—Impressive. Eliminates your overlooking a "date" with the motorist. Imprinted with your name and address.

SERVICE CREDIT MEMO CARDS—A sure means of securing parts and labor sales. Customer holds card and is credited with testing charge when recommended work is completed.

ENVELOPE STUFFERS — For Syncrograph only. Tell an easy to understand short story on the importance of distributor tests. Illustrate your equipment. Imprinted.

IMPRINTING—Print clearly or mark on your letterhead the data you wish imprinted.

PRICES—See reverse side of this page for costs.

- Mats -

Newspaper mats are available in various sizes as described on the reverse side of this page, so that in addition to a printed description of your tune-up service facilities, you can illustrate in your advertisements the equipment you are using.

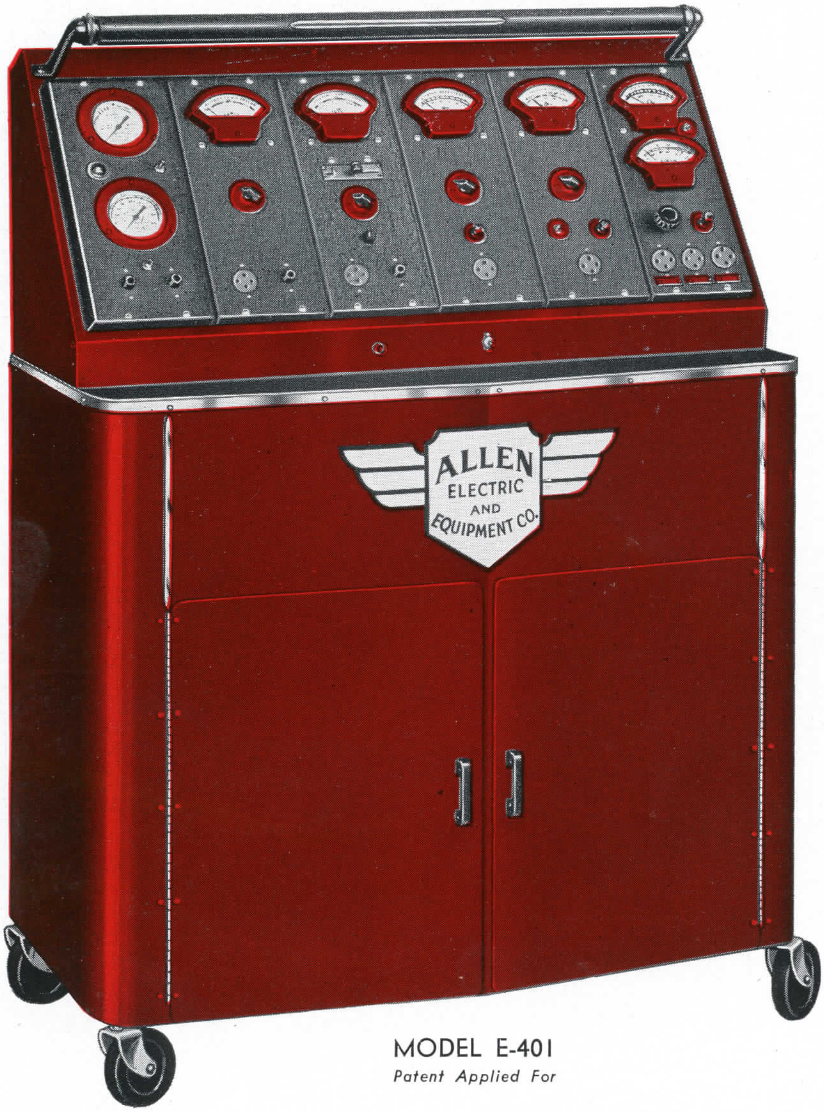
Don't overlook this low cost item in planning your advertising expenditures.

When ordering give name and model number of your equipment.

SERIES E-400

MOTOR-TESTER

With Polarized Plugs and Only Six Leads



MODEL E-401
Patent Applied For

Dimensions: Height 54″; Width 38″; Depth 20″. Shipping Weight, 251 Lbs.

EACH OF THE SEPARATE TESTING UNITS ARE REMOVABLE FROM THE PANEL

ATTRACTIVE - IMPRESSIVE - CONVINCING

Meter Dials calibrated with "Good", "Fair", and "Bad" zones
Selector Switches Control and Simplify "All Electrical Tests"
Electric Tachometer for Timing. Polarized Plugs on All Leads.

SEE FOLLOWING PAGES

ADAPTING RADIO ENGINEERING PRINCIPLES TO AUTOMOTIVE TESTING WITH SIMPLIFIED METER DIALS CALIBRATED "GOOD" AND "BAD"

TESTS

Battery—Under Load or Open Circuit.
Starter—Stall Torque or Free Running.
Compression—Comparison between Cylinders.
Distributor—Dwell, Points, Rotor, Cap.
Coil — Windings for Shorts, Opens, Grounds.
Condenser — Opens, Shorts, Leakage, Series Resistance and Capacity.
Plugs—Leakage and Insulator Condition.
Cables — Leakage, Grounds and Resistance.
Generator—Output and Condition.
Voltage and Current Regulator — Adjustment and condition.
Current Relay—Adjustment and Condition.
Ammeter—Accuracy.
Lights and Wiring — Shorts, Grounds and High Resistance.
Radio Resistors—Resistance Directly in Ohms.
Horns—Tone Equality and Wiring.
Voltage Drop—All Circuits and Units.
Fuel Pump—Vacuum and Pressure.
Vacuum—Engine, Fuel Line, Tank and Windshield Wiper.
Gas Gauge and Tank Unit—Resistance Directly in Ohms.

ADVERTISING

Inspection Reports Furnished FREE

The following material is supplied at cost. See price sheet.
Four-color Pennants
Two-color Postcards
Inspection Reports
Two-color Banners
Newspaper Mats
Display Background

INSTRUCTION

Complete Set of Operating Instructions

Personal Instruction by Trained Representative.

Converters Available for D.C. to A.C. or for 25 Cycle to 60 Cycle.

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

Printed in U.S.A. 8-10-38

Supersedes all pages No. 1A printed previous to 8-10-38.

ADVANTAGES AND COMBINATIONS OF E-400 SERIES

The E-400 Series of Motor Testers consist of several separate individual products which are complete in themselves so far as the tests each unit will perform are concerned. This enables more than one operator to use the equipment at one time. For example the spark plug and cable tester can be removed from the panel in order to make plug and cable tests on one car, while the remaining units in the tester are being used on another car.

Another advantage of the E-400 Series is that if engineering research develops newer and better methods for some particular test, only that unit has to be purchased in order that the complete tester will be modernized. This feature reduces obsolescence and depreciation.

EXPLANATION OF SERIES E-400 COMBINATIONS

(Important—Read Carefully Before Ordering)

For convenience in selecting and ordering the particular style of complete tester desired, twelve assemblies of the individual testers, together with the cabinet (same for all), have been grouped as shown below, however, **any other combination that is preferred will be furnished,** and the total price of any selected combination is the total of the prices of the individual units plus the cabinet.

All individual testers require 110 or 220 volt A.C. current (specify voltage desired), except as follows—The E-190 and E-208 can be supplied for either A.C. or storage battery operation, and the price of the E-190 is the same for either style, however, the battery operated (6 or 12 volt) E-208 is slightly higher than the 110 volt unit. The E-207 operates from a 6 volt battery for all tests except that 110 or 220 volt A.C. current is required for the coil heater. The G-32 operates from six flashlight dry cells, and current is not required for the E-196, E-197, E-198 or G-4. The E-198 is a panel only as used on the individual testers and can be furnished to fill what would otherwise be a vacant space in the cabinet in case less than the full number of testers are ordered.

Where A.C. current is not available or the cycle is other than 50 or 60, the Models E-403, E-404, E-405, E-409, E-410 or E-411 must be used, and if the selected combination contains an E-190 or E-208, it is necessary when ordering to specify that these units be furnished for **6 volt operation.**

TWELVE COMBINATIONS OF SERIES E-400 TESTERS

E-400 *Consisting of* G-32 Combustion Analyzer E-191 Condenser Tester E-192 Volt-Amp Tester E-193 Coil Tester E-194 Plug & Cable Tester E-197 Vac. & H. T. Tester G-4 Compression Tester E-420 Tester Cabinet Shipping weight, 256 lbs.	**E-401** *Consisting of* E-190 Contact Angle Tester E-191 Condenser Tester E-192 Volt-Amp Tester E-193 Coil Tester E-194 Plug & Cable Tester E-197 Vac. & H. T. Tester G-4 Compression Tester E-420 Tester Cabinet Shipping weight, 251 lbs.	**E-402** *Consisting of* E-191 Condenser Tester E-192 Volt-Amp Tester E-193 Coil Tester E-194 Plug & Cable Tester E-197 Vac. & H. T. Tester E-198 Panel Only (Dummy) G-4 Compression Tester E-420 Tester Cabinet Shipping weight, 243 lbs.
E-403 *Consisting of* E-190 Contact Angle Tester E-196 Vac. & Comp. Tester E-207 Gen. and Ign. Tester G-32 Combustion Analyzer E-420 Tester Cabinet Shipping weight, 253 lbs.	**E-404** *Consisting of* E-190 Contact Angle Tester E-196 Vac. & Comp. Tester E-198 Panel Only (Dummy) E-207 Gen. and Ign. Tester E-420 Tester Cabinet Shipping weight, 240 lbs.	**E-405** *Consisting of* E-196 Vac. & Comp. Tester 2-E-198 Dummy Panels E-207 Gen. and Ign. Tester E-420 Tester Cabinet Shipping weight, 237 lbs.
E-406 *Consisting of* G-32 Combustion Analyzer E-191 Condenser Tester E-192 Volt-Amp Tester E-193 Coil Tester E-197 Vac. & H. T. Tester E-208 Electric Tachometer G-4 Compression Tester E-420 Tester Cabinet Shipping weight, 254 lbs.	**E-407** *Consisting of* E-190 Contact Angle Tester E-191 Condenser Tester E-192 Volt-Amp Tester E-193 Coil Tester E-197 Vac. & H. T. Tester E-208 Electric Tachometer G-4 Compression Tester E-420 Tester Cabinet Shipping weight, 249 lbs.	**E-408** *Consisting of* E-190 Contact Angle Tester E-191 Condenser Tester E-192 Volt-Amp Tester E-193 Coil Tester E-197 Vac. & H. T. Tester G-4 Compression Tester G-32 Combustion Analyzer E-420 Tester Cabinet Shipping weight, 256 lbs.
E-409 *Consisting of* E-190 Contact Angle Tester E-196 Vac. & Comp. Tester E-207 Gen. and Ign. Tester E-208 Electric Tachometer E-420 Tester Cabinet Shipping weight, 246 lbs.	**E-410** *Consisting of* E-196 Vac. & Comp. Tester E-207 Gen. and Ign. Tester E-208 Electric Tachometer G-32 Combustion Analyzer E-420 Tester Cabinet Shipping weight, 250 lbs.	**E-411** *Consisting of* E-196 Vac. & Comp. Tester E-198 Dummy Panel E-207 Gen. and Ign. Tester E-208 Electric Tachometer E-420 Tester Cabinet Shipping weight, 242 lbs.

ALL E-420 CABINETS EQUIPPED WITH LIGHTING FIXTURE. USES BULBS TYPE T8. NOT SUPPLIED.

STANDARD MANUAL

A Standard Auto-Electrician's 5-year Manual containing wiring diagrams, technical information and complete specifications on all cars can be supplied.

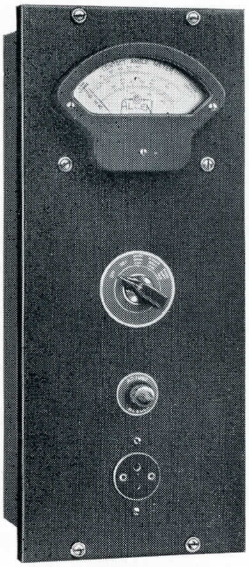
This is important in tune-up service and each year supplemental pages can be secured covering all new models of cars.

INDIVIDUAL TESTERS

Any one or more of the individual testers shown in the above combinations can be purchased separately and when so purchased are supplied complete with all necessary leads and fittings.

In this manner, a complete tester can eventually be assembled without a large investment at any one time.

DESCRIPTION OF SEPARATE UNITS OF E-400 SERIES



E-190 Contact Angle Tester

E-190 Contact Angle Tester

The E-190 Contact Angle Tester is used to measure electrically the degrees of dwell (closed period) of the breaker points, which enables a much more accurate adjustment of the gap than can be secured with a thickness gauge. It also locates distributor troubles, such as, high resistance between breaker points, worn shaft bearings, breaker plate bearings, etc.

FEATURES

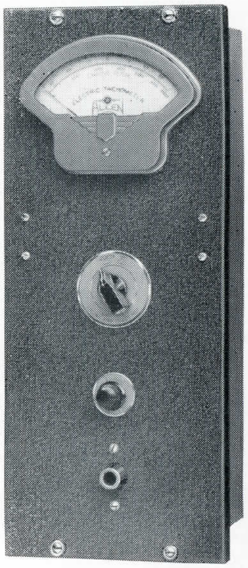
1. Available for six or 110 volt current. Specify when ordering.
2. Four Meter Scales enable testing all distributors, including Ford V-8.
3. Selector Switch has four positions, "Off", "Set", "Contact Angle" and "Point Resistance".
4. Unnecessary to detach car wiring and only two connnections required.

E-208 Electric Tachometer

The E-208 Electric Tachometer determines engine speed in R.P.M. and the per cent of increase or decrease obtained in making engine adjustments. It is used for timing the engine, determining cranking speed, setting carburetor idle adjustments, checking for weak cylinders, restrictions in air cleaners, etc. It enables making adjustments to manufacturer's specifications.

FEATURES

1. Available for 110 and 6 or 12 volt. Specify when ordering.
2. Two Meter Scales controlled by selector switch: 0-3000 R.P.M. and per cent increase or decrease.
3. Only one connection to make—direct to spark plug.
4. Rheostat adjusts for zero.



E-208 Electric Tachometer

E-191 Condenser Tester

E-191 Condenser Tester

The E-191 Condenser Tester utilizes a high frequency radio circuit for locating bad bonding on the inside of the condenser known as "Series Resistance", and it also tests "Leakage", "Opens", "Shorts" and "Capacity". Tests can be made **without removing the condenser from the car.**

FEATURES

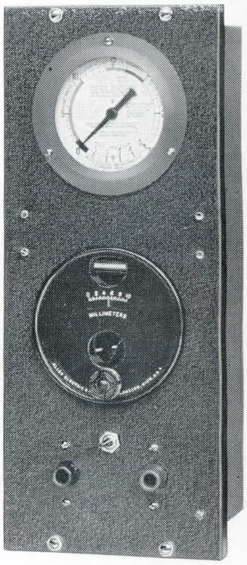
1. Tests made at 500 volt D.C. for shorts, opens and leakage, and at 350 volts A.C. for capacity. Series Resistance is tested at high frequency.
2. Moving Coil Meter is calibrated in colored zones denoting "Leakage", "Series Resistance" and "Good". Capacity scale is in microfarads.
3. Tests resistance of radio resistors, tank units and gas gauges directly in ohms on two scales.
4. Five-position selector switch controls all tests.

E-197 Vacuum and H.T. Tester

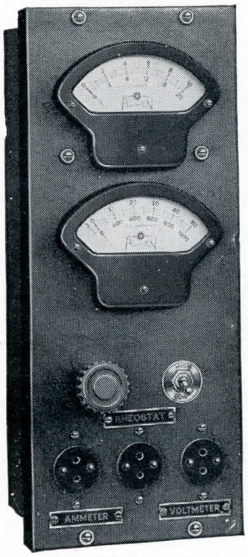
The E-197 Vacuum and High Tension Tester combines the G-8 Vacuum Tester with Fuel Pump Scale and the E-18 High Tension Tester, making an ideal unit for checking Combustion, Carburetion and H.T. Ignition troubles. The G-4 Compression Tester is supplied with all E-400 Series combinations in which the E-197 is also used.

FEATURES

1. Large 3¾″ extremely sensitive gauge. Two-color dial calibrated 0-30″ vacuum and 0-5 lbs. Adapters supplied.
2. Adjustable bakelite spark gap calibrated 0-10 millimeters. Places load on ignition system to determine trouble in H.T. circuit. Coil misses audible for several feet. The neon tube detects cross fire in cables.



E-197 Vac. & H.T. Tester



E-192 Volt-Amp Tester

E-192 Volt-Amp Tester

The E-192 Volt-Amp Tester is used to test **horns, starters, batteries, generators, cut-out relays, voltage regulators, current limit relays, and the voltage drop** and **current draw** of **all circuits.**

FEATURES

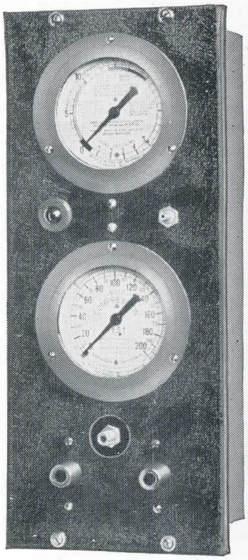
1. Moving Coil Meters with two-color dials on silver background. Ammeter scale 0-10, 3-0-50 and 0-1000. Voltmeter 0-1, 0-10 & 0-50.
2. High and Low Switch permits using 0-10 or 0-50 voltmeter scale without changing polarized plugs.
3. Carbon Pile Rheostat with 50 ampere capacity. Push Button switch for operating one volt scale.

E-196 Vacuum and Compression Tester

The E-196 Vacuum and Compression Tester combines the G-8 Vacuum Tester with Fuel Pump Scale, and G-4 Compression Tester with hose and gun.

FEATURES

1. Large 3½″ extremely sensitive gauges. Two-colored dials. Vacuum scale 0-30″ and 0-5 lbs. Compression ratio scale also calibrated 0-200 lbs.
2. Compression Gun equipped with release valve. Rubber adapters fit all size spark plug holes.



E-196 Vacuum and Compression Tester

Size of Each Tester Unit 14½″ x 6″ x 4⅝″

DESCRIPTION OF SEPARATE UNITS OF E-400 SERIES

E-193 Coil Tester

E-193 Coil Tester

The E-193 Coil Tester operates on an entirely new principle, utilizing a high frequency radio circuit to determine the condition of the primary and secondary windings. This method eliminates the use of a **battery, spark gap, breaker points, motor and cam,** and makes it **unnecessary** to use **coil specifications.**

FEATURES

1. Moving Coil Meter 3¾″ diameter.
2. Three color meter dial with words "Good", "Fair" and "Bad" which interpret tests.
3. Built-In Coil Heater for 6 or 12 volt coils. Clock control mechanism.
4. Four-Position Selector Switch permits testing and heating with one set of leads.

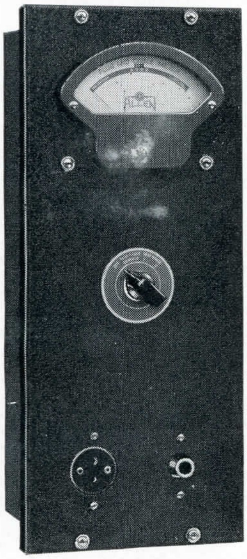
G-32 Combustion Analyzer

Combustion analysis is the quickest and most accurate way of convincing car owners of the need of a complete motor tune-up, and with the G-32 the test can be made in from three to five minutes on any kind of straight gasoline or blends. By the analysis the percentage of waste is determined.

FEATURES

1. Moving Coil Meter is rapidly responsive to gas changes.
2. Extremely accurate readings both lean and rich.
3. Air Fuel Ratio and Combustion Efficiency readings.
4. Analyzing Cell and Batteries are extremely long lived. Cell guaranteed 8 months.
5. Tail Pipe Sampling Tube and 15′ hose supplied.

G-32 Analyzer



E-194 Plug & Cable Tester

E-194 Spark Plug Tester

The E-194 is entirely new type of tester for determining spark plug condition, and is the only tester built that discloses insulator leakage to ground. Tests are made under actual operation with the **engine running and the spark plugs hot.** It also locates leakage in rotors, caps and cables.

FEATURES

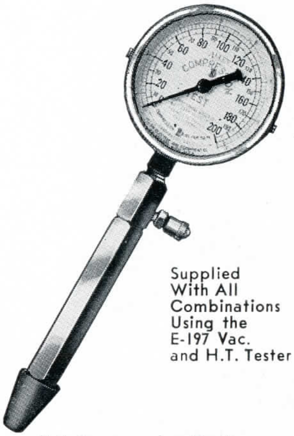
1. Full coil current delivered to plug which fires during test. A.C. line voltage actuates tester.
2. Three-color meter dial with "Inefficient", "Good", and "Leakage" zones to interpret tests.
3. Selector Switch controls all tests and turns tester off.
4. Only two leads required. Insulated testing prod furnished.
5. Determines all causes of plug failure.

G-4 Compression Tester

Good compression is necessary to maintain an efficient engine, and with the exception of a leaky cylinder head gasket, loss of compression is usually the result of poorly seating valves or ring blowby. The G-4 Compression Tester compares the compression in each cylinder, locating those that are weak and determines the cause.

FEATURES

1. 3½″ gauge. Easy to read.
2. Two-Color Dial calibrated 0-200 lbs. and with Compression Ratio Scale.
3. Release Valve lets air out of gauge after each test.
4. Rubber Adapter fits all size plug holes.



Supplied
With All
Combinations
Using the
E-197 Vac.
and H.T. Tester

G-4 Compression Tester

E-207 Generator and Ignition Tester

Operated from a 6 Volt Battery
Substitutes for E-191, E-192, E-193 and E-194

Meters—Same as E-192. Page 3A.

Neon Tube—Flashes indicate condition of ignition cables and plugs.

Adjustable Spark Gap—Molded bakelite. Calibrated 1 to 10 millimeters.

Coil Switch—Part of spark gap assembly. Controls both primary and secondary circuits. Makes comparison test between coils with or without engine operating.

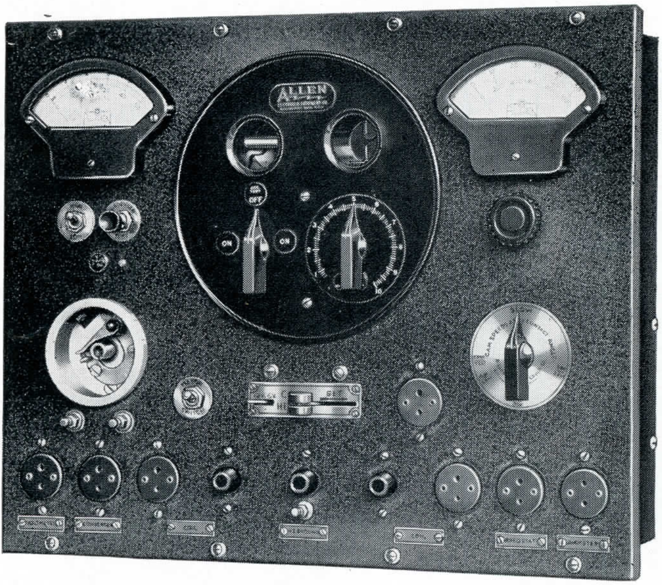
Coil Heater—Requires A.C. current. Heats 6 to 12 volt coils, both primary and secondary. Time Clock controls heating interval.

Motor Generator—Operates breaker points for coil testing. Supplies 500 volts D.C. for condenser testing.

Motor Speed Control—By Adjustable rheostat. Etched plate under knob indicates speed.

Carbon Rheostat—Used for testing voltage and current regulators.

Leads—Separate Plug-in type.



Model E-207. Shipping Weight, 62 lbs. Size 43½″x6″x4⅝″

MOTOR-TUNER

OPERATES FROM
SIX VOLT STORAGE BATTERY

A. C. CURRENT REQUIRED ONLY FOR COIL HEATER AND LIGHTS

Model E-427

WITH VACUUM TEST

Vacuum and Fuel Pump Tester is mounted above the panel on the Model E-427. Not furnished with Model E-426. Otherwise both Models alike.

◆

The E-207 Generator and Ignition Tester (removable from panel) is the Testing Unit of the E-426 and E-427 Motor Tuners.

◆

The Model E-425 Cabinet used for the E-426 and E-427 is also designed for three of the E-190 Series of Testers such as the E-191 Condenser Tester, E-193 Coil Tester and E-194 Spark Plug Tester.

See Description Following Page.

E-426 and E-427 Test

Batteries
Starters
Generators
Ignition
Ammeters
Spark Plugs
Distributors
Horns
Relays

Coils (Comparison)
Condensers (500 V D.C.)
Ignition Cables
Lights and Wiring
Vacuum (Model E-427)
Fuel Pumps (Model E-427)
Voltage Regulators
Electric Fuel Gauges
Voltage Drop

Meters in Direct Line of Vision—Leads with Polarized Plugs

Description and Specifications on Following Page.

DIMENSIONS

53 Inches High (Top Lighting Fixture) 23 Inches Wide
56 Inches High (Top Vacuum Gauge) 19 Inches Deep
Shipping weight, 199 lbs.

BUY ON EASY PAYMENTS

INSTRUCTION

Complete Set of Operating Instructions.

Personal Instruction by Trained Representative.

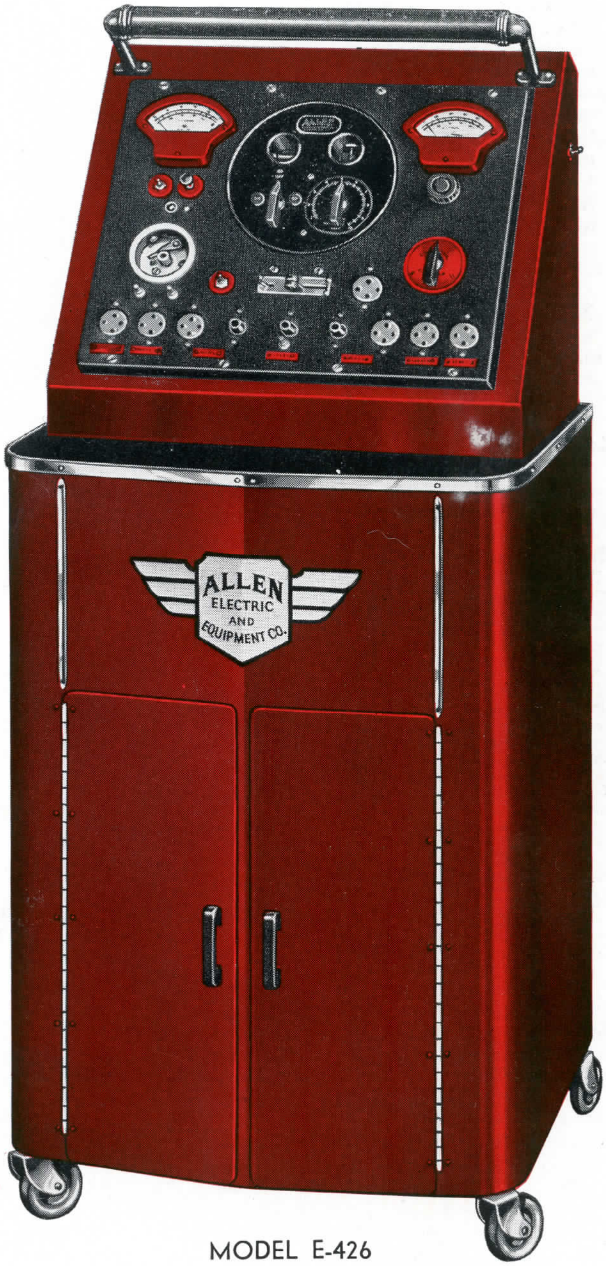
ADVERTISING

200 Inspection Reports Furnished FREE.
The following material is supplied at cost.
See price sheet.

Cloth Pennants
Fibre-Board Pennants
Cloth Banners
Post Cards
Display Background

Model E-426

WITHOUT VACUUM TEST



MODEL E-426

Consists of E-207 Generator, Starter and Ignition Tester (removable from panel) and E-425 Cabinet.

Model E-427 same except with Vacuum Gauge.

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

ALLEN E-207

GENERATOR, STARTER and IGNITION TESTER

DESCRIPTION AND SPECIFICATIONS

Meters—Moving coil type with two-color dials on silver background. Ammeter scale 0-10, 3-0-50, and 0-1000. Voltmeter scale 0-1, 0-10, and 0-50.

Meter Switch—High and Low Switch permits using 0-10 or 0-50 voltmeter scale without changing polarized plugs. Push button switch for operating one volt scale.

Carbon Rheostat—Used for placing a load in the battery circuit when testing generators, relays and voltage regulators.

Neon Tube—Flashes indicate condition of ignition cables and plugs. Coil misses easily detected.

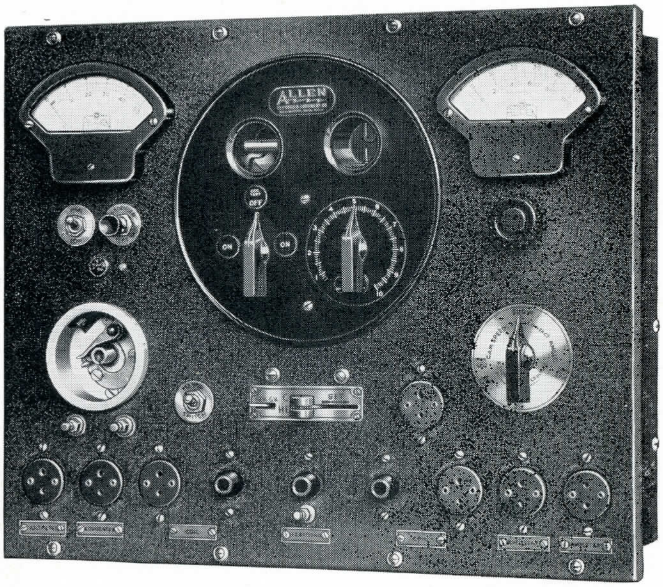
Adjustable Spark Gap—Constructed entirely of molded bakelite. Calibrated 1 to 10 millimeters with spark gap contained in bell mouth housing, which acts as a sounding board, making sparks audible for several feet. Simple adjustment to keep gap in calibration.

Coil Switch—A part of the spark gap assembly. Controls both primary and secondary circuits. Makes comparison test between coils, with or without engine operating.

Coil Heater—Mounted on panel. For 6 or 12 volt coils. Heats both primary and secondary windings of two coils simultaneously. Automatic time clock controls heating interval.

Motor Generator—Mounted inside Tester and so arranged to permit easy adjustment of the breaker points which are operated by motor cam. 6-volt Generator supplies 500 volts D.C. for Condenser Test.

Motor Speed—Controlled by adjustable rheostat. Etched plate under knob indicates speed.



Model E-207. Shipping Weight, 68 lbs. Size 18¼"x14½"x4⅝"

G-8 VACUUM GAUGE—G-4 COMPRESSION GAUGE
The purchase of a G-8 Vacuum Gauge (supplied with Model E-427) and a G-4 Compression Gauge to use with the E-426 and E-427 Motor-Tuner makes the unit complete for both electrical and mechanical testing.

— MOTOR-TUNER FEATURES —

Every possible precaution, such as enlisting the aid of engineers of leading car and electrical parts manufacturers has been taken to insure the accuracy of Allen Equipment.

All coil leads are of the same length which is necessary when making comparison tests.

The coil heater heats both primary and secondary windings of two coils at the correct ampere rate and proper length of time.

The ball bearing motor generator holds a constant speed at all times. This assures accurate coil testing results.

Condensers are tested at 500 volts D.C. as recommended by leading condenser manufacturers.

The finest grade of moving coil meters are used. Other types of meters are inaccurate for making precision adjustments.

The 1000 ampere shunt for starting motor tests connects directly in the starting circuit. To do otherwise permits an excessive voltage drop. The same applies to other shunts and tests.

Speed in testing is obtained through the use of easily attached leads with polarized plugs.

The Allen Motor Tuner provides facts, and eliminates guesswork. It secures favorable car owners attention, and is, in effect, an insurance policy against losing customers.

E-425 CABINET—DESCRIPTION

Illustrated on page No. 9A, in combination with the E-207 Tester to form the E-426 Motor Tuner, is the E-425 Cabinet, which is sturdily constructed throughout, and has two doors, to permit storage within for tools, parts, inspection reports, and other items. Its rounded corners, and attractive bright red and chrome finish will do much to improve the appearance of any tune-up department. It is designed to hold the E-207 tester or any three of the Allen E-190 Series Testers, G-32 Combustion Analyzer, or a Dummy Panel.

The Cabinet is equipped with a rubber covered table, rubber tired swivel type casters, space for battery in rear, and Lighting Fixture. Uses type T-10 bulbs—not supplied.

Model E-425 Cabinet—53" High, 23" Wide, 19" Deep.
Shipping weight, 83 lbs.

SERIES E-190 TESTERS IN E-425 CABINET

Using the E-425 Cabinet, various combinations of testing units are possible, as the panel is constructed to hold three of the E-190 Series of Testers, including the G-32 Combustion Analyzer.

In the panel may be placed any three of the following units:—E-190 Contact Angle Tester, E-191 Condenser Tester, E-192 Volt-Amp Tester, E-193 Coil Tester, E-194 Spark Plug Tester, E-196 Vacuum, Compression and H.T. Tester, or G-32 Combustion Analyzer. A popular combination is the E-190, E-194, and G-32, and these or any of the other testers selected are removable from the panel.

The price of the complete unit is the total of the prices of the individual items selected, plus the E-425 Cabinet, all of which can be determined from the price sheet.

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

Printed in U.S.A. 3-15-38

ALLEN
SYNCROGRAPH
FOR COMPLETE DISTRIBUTOR TESTS

CONTACT ANGLE METER
ELECTRIC TACHOMETER
TEST SELECTOR SWITCH
ONLY ONE LEAD TO CONNECT

A PRECISION INSTRUMENT

(Approved by Leading Electrical Parts Manufacturers)

The Allen Method of combining a specially designed Contact Angle Meter with a Neon Tube to check distributor action makes obsolete other procedures for testing distributors.

The Syncrograph, when equipped with portable stand is known as the Model E-136. Less stand, for bench mounting, is Model E-137 (see next page). Both models are equipped with pump and gauge for checking the action of vacuum controlled distributors.

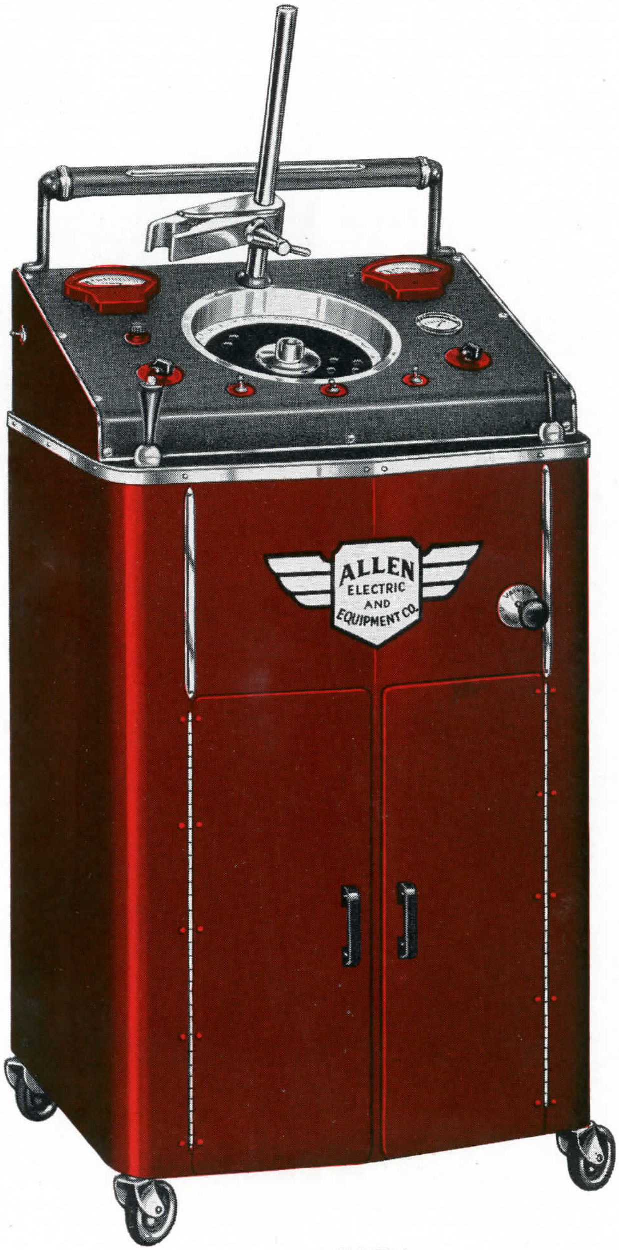
FEATURES

1. **Inclined panel makes meters easy to read, and controls readily accessible.**
2. **Contact Angle Meter calibrated for all distributors.**
3. **Vibrationless Electric Tachometer.**
4. **Neon Tube flashes easily discernible.**
5. **Universal Chuck for driving all types of distributors.**
6. **Test Selector Switch—Controls all tests.**
7. **Variable speed, reversible motor—stable operation at all speeds.**
8. **Built-in Charger—maintains voltage of test battery.**
9. **Graduated 0-360 degree universal ring—for testing all distributors.**
10. **Specifications for all distributors.**
11. **Splendid appearance. Finished bright red, trimmed with chrome. Show case lighting fixture.**
12. **Easy to understand instructions. Personal assistance by trained representative.**

THE SYNCROGRAPH

1. Tests all types of Distributors.
2. Checks Points for Degrees of Dwell.
3. Synchronizes Two Arm Breakers.
4. Tests Automatic Spark Advance.
5. Checks for Worn Cams.
6. Checks for Play in Shafts.
7. Locates Distributor Grounds.
8. Detects Chatter at Points.
9. Detects Imperfect Seating of Cam Follower.
10. Detects Worn, Pitted, or Defective Points.

WATCH THE NEON FLASHES



MODEL E-136
(Patent Applied for)
Shipping Weight
184 lbs.

22½" Wide
19" Deep
54" High (Top Clamp Post)
46" High (Top Light Fixture)

BUY ON EASY PAYMENTS

EQUIPPED WITH LIGHTING FIXTURE. USES BULBS TYPE T10. NOT SUPPLIED

Allen Electric and Equipment Company
Kalamazoo, Michigan, U. S. A.

THE SYNCROGRAPH

DESCRIPTION AND SPECIFICATIONS

ELECTRIC TACHOMETER
Vibrationless at all speeds. Extremely accurate. Dial is calibrated 100 to 6000 R.P.M. to correspond to car engine (crankshaft) speed, which is twice distributor shaft speed.

DRIVING MOTOR
Rectifier provides current for operating D.C. Motor used because of its greater torque, stability, etc. Speed controlled by rheostat. Switch reverses motor.

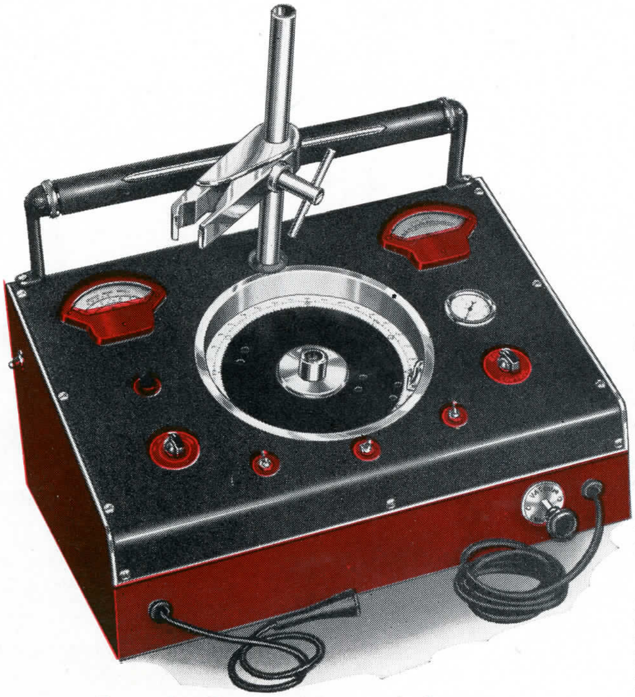
BUILT-IN CHARGER
Always operates when motor is running, or can be used independently for charging Tester Battery.

NEON TUBE
Mounted in bakelite holder screwed to underside of revolving plate. Light shows through narrow slot in plate.

VACUUM PUMP AND GAUGE
For testing vacuum operated distributors.

PANEL CONTROLS
Readily accessible — plainly marked.

CLAMP ARM ASSEMBLY
Two piece construction, anchored at post end, with heavy spring to open it automatically Arm jaws open sufficiently to hold any size distributor. Entire unit can be raised or lowered on clamp assembly post. Mounted so that perfect alignment is assured.



DISTRIBUTOR ADAPTERS
Special driving couplings are furnished, which mount in drive shaft, as well as adapters for Vacuum Control Tests. Bushing and Arm for Chevrolet distributors, and a specially designed driving chuck also supplied.

FORD TIMING ADAPTERS
Necessary adapters and fittings supplied so that V-8 Distributors can be timed before installation on the motor. This saves necessity of timing by means of piston position.

TEST SELECTOR SWITCH
Five Positions—"Off", "Syn.", "Set", "Angle", and "Res." Permits making all tests with but one connection to distributor.

LIGHTING FIXTURE
Standard equipment on both models. Type T10 bulbs required. Not supplied.

PORTABLE STAND, E-138
Furnished with Model E-136 only. Well constructed. Attractive appearance. Bright red and chrome finish. Equipped with rubber tired casters, roller bearing swivel type.

SPECIFICATIONS
Data supplied is furnished by Delco-Remy, Auto-Lite, Northeast and Ford, and contains complete information including rotation, cam angle, synchronizing angle, automatic advance, vacuum control unit used, etc.

Bench Type — Model E-137

Shipping Weight, 68 lbs.
22½" Wide
14½" Deep
23" High (Top Clamp Post)
15" High (Top Light Fixture)

Purpose of 0-360° Ring and Neon Flashes

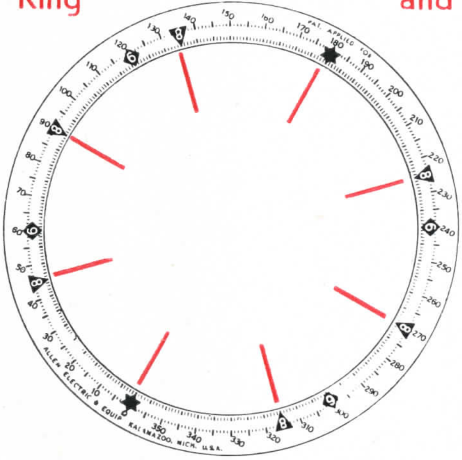
●

One 0 to 360° ring serves all makes of distributors. Special markings facilitate reading of firing points on four, six, eight, twelve and sixteen cylinder cars.

●

Illustration shows accurate firing pattern for an eight cylinder motor. Note evenness of the hair-line Neon flashes against the 45° markings on Ring.

●



SYNCHRONIZING RING AND PATTERN

●

Uneven synchronization, cam wear, play in shaft or chatter in breaker arm is readily discernible by Neon flashes.

●

Automatic spark advance (governor action) is tested by the number of degrees the Neon flashes travel along the Ring as distributor speed is increased.

●

FEATURES OF CONTACT ANGLE METER

PRINCIPLE AND ACTION

The meter circuit is NON-INDUCTIVE, which permits a reading of instantaneous values of the current flowing through the breaker points.

The principle upon which the meter operates is that a definite amount of current is required to balance the meter hand on the adjust needle line. This adjustment is made with the distributor idle and the breaker points closed, so that a full deflection of the meter hand from zero to the end of its scale is obtained.

It then follows that in driving the distributor if the points are set to be open one-half of the time and closed the balance of the period between cam lobes, the meter hand will read on a point exactly one-half of the meter scale. Note that the 60°, 45°, 30°, and 22½° readings are in the exact center of each of the respective cam lobe scales. Whatever the closed period of the point is, it is registered exactly on the meter, because this is a certain percentage of the total point action. The meter scales are graduated in degrees as each degree is a certain percentage of the total meter reading.

CONSTRUCTION

A D'Arsonval type moving coil movement is used with a two-colored dial.

USE OF SCALES

8	lobe	for	6	cylinder	cars	two	arm	distributors
4	"	"	4	"	"	one	"	"
4	"	"	8	"	"	two	"	"
6	"	"	6	"	"	one	"	"
6	"	"	12	"	"	two	"	"
8	"	"	8	"	"	one	"	"
8	"	"	16	"	"	two	"	"

PURPOSE

To adjust breaker points gaps by determining the closed period (degrees of dwell) rather than the opening in thousandths of an inch.

ALLEN COMBUSTION ANALYZER

Utilizes the Wheatstone Bridge Principle of Analyzing the Carbon Dioxide (CO_2) and Carbon Monoxide (CO) Content of Exhaust Gases

---

A SUPER SALESMAN FOR MOTOR TUNE-UP WORK

(Adjust Carburetors Scientifically)

Combustion Analysis is the quickest and most accurate way of convincing car owners of the need of a thorough motor tune-up.

The test can be made in from three to five minutes on any kind of straight gasoline or blends, and the percentage of waste is in this way determined.

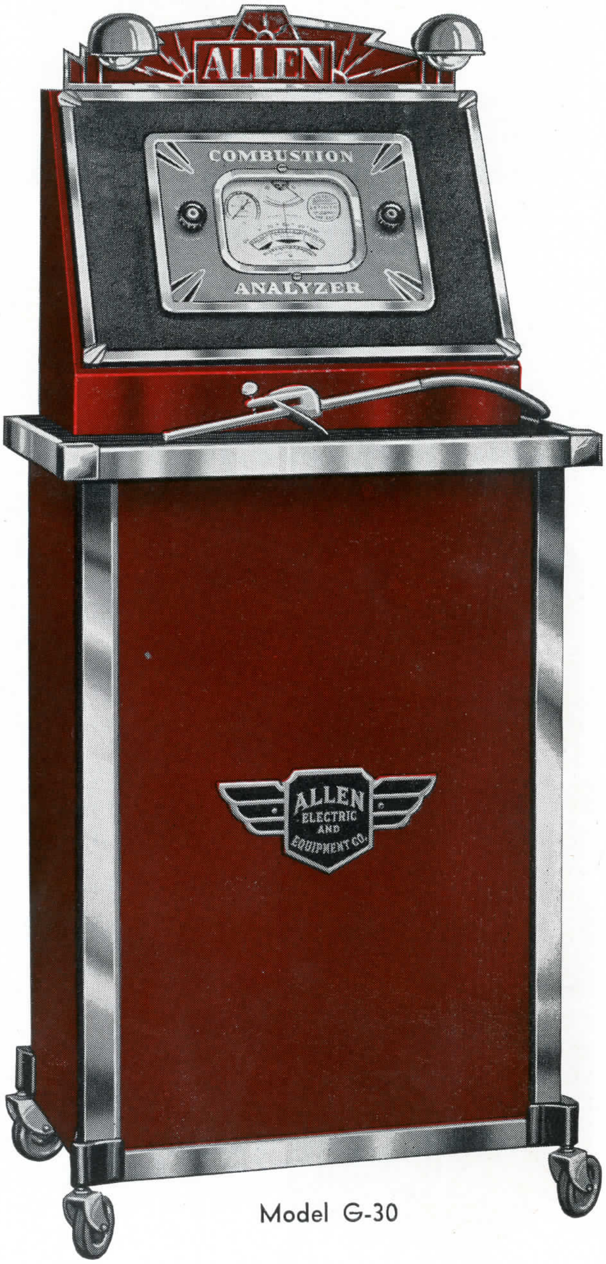
Anything that affects the ability of an engine to efficiently burn its mixture affects its ability to produce power. An Allen Combustion Analyzer is a necessity in every well equipped service station.

FEATURES

1. Analyzing unit removable for road testing.
2. Meter rapidly responsive to gas changes.
3. Extremely accurate readings on both lean and rich sides of scale.
4. Large etched meter dial, 6x4½ inches. Three colors on silver background. D'Arsonval moving coil movements. Zero adjustments.
5. Registers both **Air Fuel Ratio** and percentage of **Combustion Efficiency.**
6. Built-in 0-30 inch vacuum gauge.
7. Easy to operate. Only two adjustments.
8. Analyzing cells and flash light batteries life extremely long. Easily changed when replacement is required. Analyzing cells guaranteed 8 months. Life is considerably longer as when they become sluggish a treatment with Carbon Tetrachloride rejuvenates them.
9. Analyzing mechanism enclosed in sheet steel case, which forms the back of the aluminum panel casting.
10. Universal tail pipe sampling tube with 15 feet of rubber hose.
11. Illuminated panel. Two 110 volt lamps with chrome shields. Bulbs not supplied.
12. Splendid appearance. Stand finished bright red with chrome molding and rubber covered table. Swivel type rubber tired casters.

Overall dimensions 57″ High, 24″ Wide. 17″ Deep. Shipping weight, 156 lbs.

SEE NEXT PAGE



Model G-30

● BUY ON EASY PAYMENTS

Allen Electric and Equipment Company

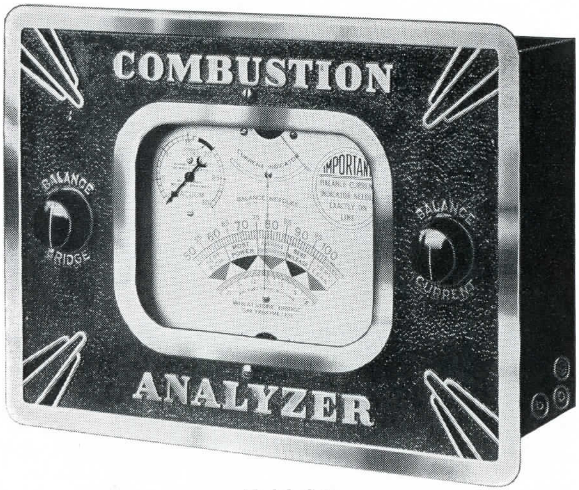
Kalamazoo, Michigan, U. S. A.

Printed in U.S.A. 1-3-38

Supersedes all Combustion Analyzer pages printed previous to 1-3-38.

ALLEN COMBUSTION ANALYZER

FOR FLOOR OR ROAD TESTING

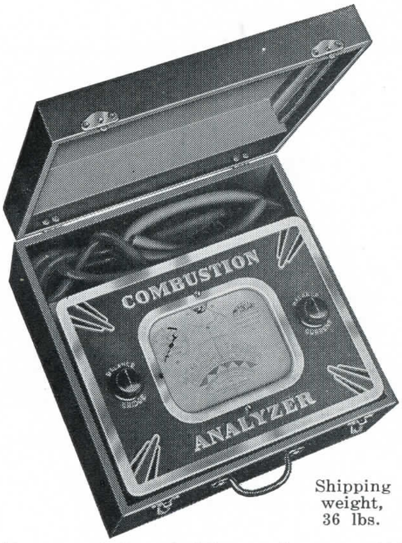


Model G-31

The Combustion Analyzer meter is 6″ long by 4½″ wide, and is calibrated with easy to read figures. The Air Fuel Ratio scale determines the number of pounds of air used with each pound of gasoline, and the Combustion Efficiency scale interprets the fuel ratio into car owner language by indicating the percentage of the fuel being converted into motor power. The Vacuum Gauge determines motor conditions.

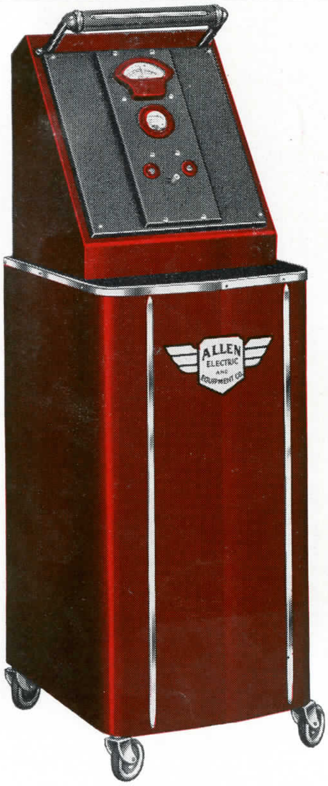
The Model G-31 Combustion Analyzer is the analyzing unit used with the Model G-30, from which it is removable for road testing.

The sampling hose is of sufficient length so that the G-31 can be placed alongside the driver while road tests are being made, or can be held in the lap.



Shipping weight, 36 lbs.

Above illustrates G-31 packed in carrying case which is furnished at no additional cost. Case not included with Model G-30.
G-33 Carrying Case can be purchased separately



G-46 Analyzer

MODELS G-32, G-34, AND G-46

MODEL G-32—Constructed with the same cell block, rheostats, and all other working parts as found in the G-31 Analyzer, but is mounted in a smaller case, has smaller meters, and is furnished less vacuum gauge. A carrying handle at the top permits suspending Analyzer from motor tie-rod during a test. Fifteen feet of hose and universal tail pipe sampling gun furnished, also 2′ length drain hose. Eight flash-light batteries furnish current to Wheatstone Bridge Cells.

Model G-32—14½″ High, 6″ Wide, 4⅝″ Deep
Shipping Weight 16 lbs.

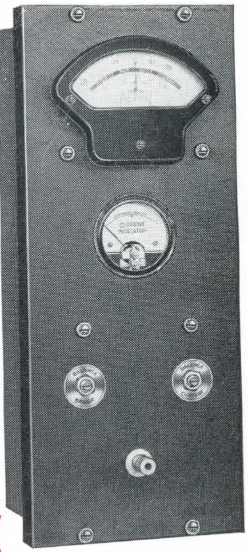
MODEL G-34—Consists of Model G-32 mounted on G-35 portable cabinet which, while not as large or attractive as the G-47, is a good looking convenient cabinet, equipped with rubber tired swivel type casters.

Model G-34—51½″ High, 17½″ Wide, 14½″ Deep
Shipping Weight 95 lbs.

MODEL G-46—Consists of Model G-32 mounted on G-47 portable cabinet, illustrated at left. Has rubber tired swivel type casters. Modern appearance. Attractively finished in bright red and chrome. Equipped with lighting fixture. Uses bulb type T10—not supplied.

Model G-46—53″ High, 23″ Wide, 19″ Deep
Shipping weight 102 lbs.

Model G-35 Cabinet only—shipping weight—80 lbs.
Model G-47 Cabinet only—shipping weight—83 lbs.



G-32 Analyzer

Road Testing is Important and is Recommended by Carburetor, Ignition, Truck and Car Manufacturers

Floor testing is satisfactory in setting idling adjustments, but in order to determine exactly the air fuel ratio developed at medium and high speeds, there is no accurate substitute for road testing except by using a dynamometer. Racing a motor on the service floor does not duplicate road conditions.

REPLACEMENT CELLS FOR ALL MODELS

Analyzer cells guaranteed 8 months

G-31 and G-32 Replacement Cell Assembly..........$15.00
With $5.00 allowance for old cells when returned.

TUNE-UP SERVICE
INCREASES
SALES
PROFITS
AND
PRESTIGE

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

ALLEN MILEAGE ANALYZER

Model E-331

FOR FLOOR OR ROAD TESTS

Checks Fuel Consumption Directly In Miles Per Gallon

SELLS SERVICE-- PROVES YOUR TUNE-UP WORK

(Easily and Quickly Attached)

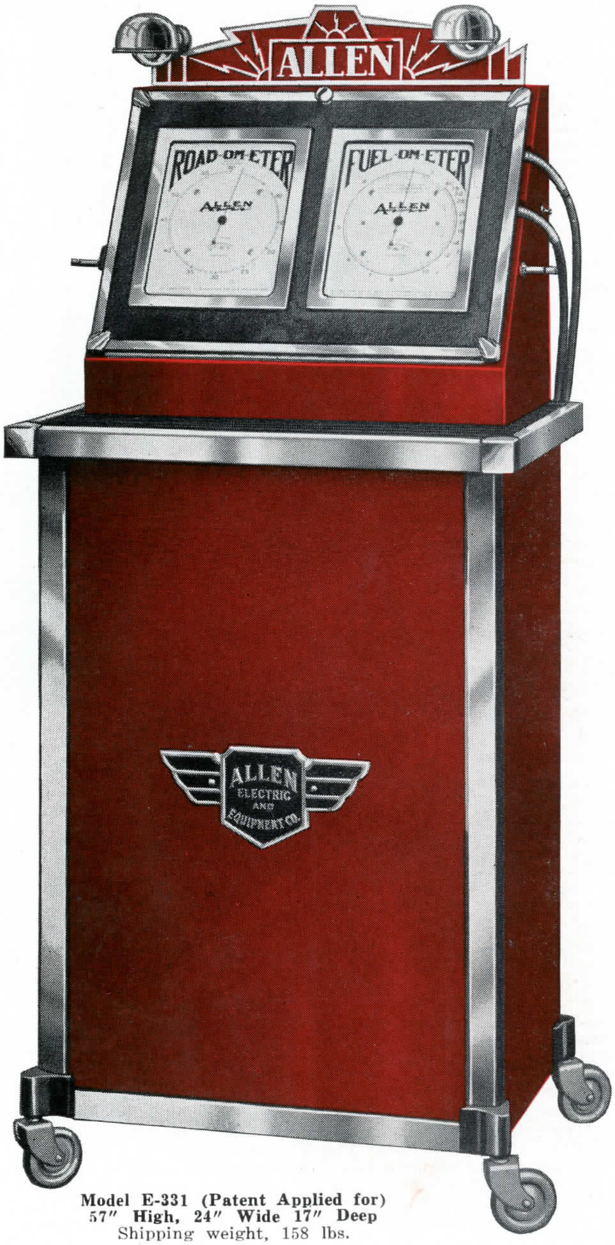
The E-331 Mileage Analyzer provides a means of eliminating road testing in checking the mileage obtained on passenger cars and light trucks at cruising speeds from 30 to 60 M.P.H. On heavy trucks from 10 to 30 M.P.H. It saves time and labor in satisfying owner complaints, proves mileage claims and shows the before and after results of motor tune-up service.

FUEL-OM-ETER FEATURES

1. Unit removable for road testing. Panel of cabinet is hinged at bottom.
2. Two-color etched dial has miles per gallon and gallon per hour scales. Measures gasoline flow from tank to carburetor.
3. Idling test in gallons per hour. Important to taxicab and fleet owners.
4. Two 9′ lengths of duprene hose and 5 sets of adapters for attachment between gas line and carburetor.
5. M.P.H. compensator enables use of only one "miles per gallon scale" for all road speeds. Calibrated in one mile steps from 10 to 100 M.P.H.
6. Filter prevents dirt from reaching mechanism.
7. Polished aluminum frame, rubber mounted, holds glass firmly in place over dial.
8. Handle for attachment to car door window located at rear of case.

ROAD-OM-ETER FEATURES

1. Two-color etched dial calibrated in miles per hour equivalent to road speed.
2. Revolutions Per Mile compensator calibrated from 1000 to 10000 enables compensating for differences in gear ratios that affect the number of engine revolutions required for one mile of road travel.
3. Carburetor attachment fixture to hold adjustable tube for locating point of highest venturi vacuum. 9′ of rubber tubing furnished.
4. Tests vacuum of air cleaners which discloses clogged condition caused by oil and dirt.



Model E-331 (Patent Applied for)
57″ High, 24″ Wide 17″ Deep
Shipping weight, 158 lbs.

● BUY ON EASY PAYMENTS

For Principle of Operation See Next Page

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

Printed in U.S.A. 11-20-36

Supersedes all pages No. 21A printed previous to 11-20-36

ALLEN FUEL-OM-ETER

Model E-330

For Mileage Testing At Any Road Speed

PRINCIPLE OF OPERATION

FUEL-OM-ETER

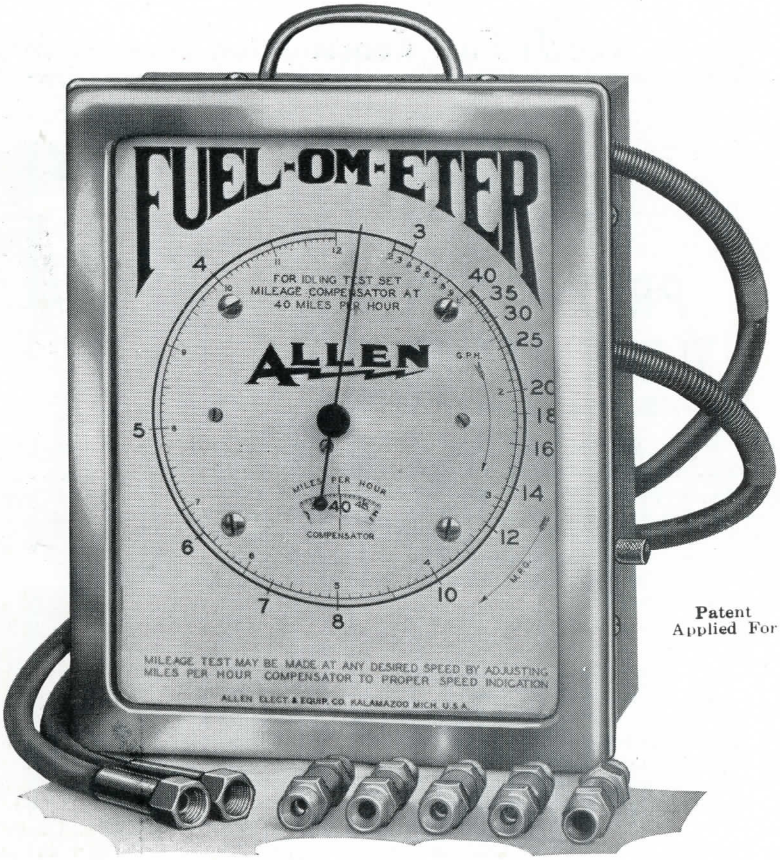
The Fuel-Om-Eter is operated by a difference in pressure on opposite sides of a diaphragm, the position of which changes in relation to the amount of gasoline flowing from the tank to the carburetor. As the position of the diaphragm changes, it causes movement of a ball in an accurately tapered hole (metering device) through which gasoline flows from one side of the diaphragm to the other. The movement of the ball and diaphragm controls the mechanism which actuates the hand on the dial.

ROAD-OM-ETER

The Road-Om-Eter is a diaphragm-operated low reading vacuum gauge, which is actuated by changes in vacuum at the venturi of the carburetor. A movement of the dial hand is obtained as the diaphragm changes its position, due to changes in the mixture volume requirements of the motor.

At the same number of engine revolutions per mile at cruising speeds, the vacuum at the venturi of the carbureter is the same, within close limits, for all later model cars and trucks using down-draft carburetors. For this reason, it is possible to determine road speeds by venturi vacuum up to those engine speeds permissible in floor testing.

The compensating mechanism compensates for differences between free running without load and cruising or light load conditions, as well as motor revolutions per mile.


FUEL-OM-ETER
ALLEN
FOR IDLING TEST SET MILEAGE COMPENSATOR AT 40 MILES PER HOUR
G.P.H.
M.P.G.
MILES PER HOUR
COMPENSATOR
MILEAGE TEST MAY BE MADE AT ANY DESIRED SPEED BY ADJUSTING MILES PER HOUR COMPENSATOR TO PROPER SPEED INDICATION
ALLEN ELECT & EQUIP. CO. KALAMAZOO MICH. U.S.A.

Patent Applied For

Model E-330. 11″ High, 8¼″ Wide, 4½″ Deep. Shipping Weight, 18 lbs.

CAR AND TRUCK SPECIFICATIONS

Specifications by makes and models of all late passenger cars and trucks using down-draft carburetors are supplied with the E-331, covering engine revolutions per mile of travel in high gear. A formula for determining this information for any car or truck is furnished in the instruction book.

This data furnishes the information required in setting the revolutions per mile compensator.

MILEAGE CURVE CHART

The Road-Om-Eter is calibrated to show road speeds under ideal conditions equivalent to testing on a level road in two directions which equalizes wind resistance. Fuel-Om-Eter road tests should be conducted to show the maximum mileage possible at the speeds at which the tests are made.

Because the relationship between such tests and the actual mileage obtained under every-day driving conditions is quite different, a Mileage Curve Chart is supplied.

This chart has three curves, one showing maximum mileages possible at all speeds, one of minimum mileages at wide open throttle at all speeds with the car speed controlled by applying the brakes, and the other an average of the two conditions.

Through this chart, it is possible to explain to owners why under normal every-day driving, they cannot expect to obtain the maximum mileages indicated by the tests.

USE OF THE E-330 AND E-331

Both the E-330 and E-331 are for use in showing the mileage being obtained at different speeds of travel and are, therefore, invaluable aids in satisfying owner mileage complaints, some of which are justified, and most of which are not.

Where actual trouble exists, it is quickly discernible through lack of mileage, and the instructions furnished contain many helpful suggestions of how to overcome such difficulties.

It is a quick and easy matter to show poor mileage conditions and to demonstrate the improvement that has been made after the carburetor has been reconditioned. Remarkable results are possible when used in conjunction with the Allen Combustion Analyzer.

TESTING PROCEDURE

Accurate results from road testing require considerable care in making the tests as to driving, weather conditions, wind resistance and the type of road over which the test is made. It isn't to be expected that accuracy in testing can be secured without some experience with the Fuel-Om-Eter, as such matters as holding the throttle steady, road unevenness, etc., affect the flow of gasoline, the minutest quantity of which affects the dial indication.

Wasteful driving habits, such as fast acceleration, high road speeds, excessive use of low gears, etc., are easily demonstrable.

Allen Electric and Equipment Company

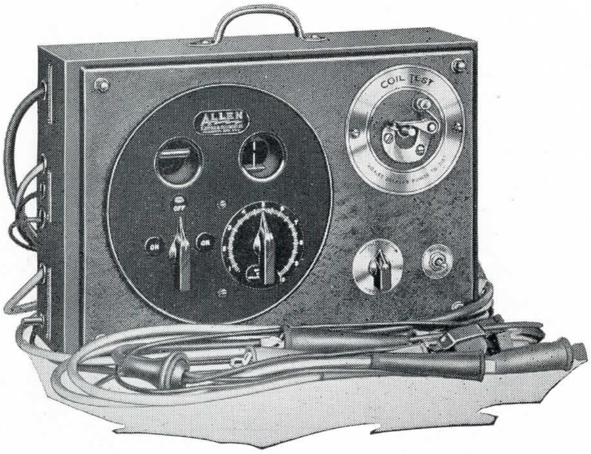
Kalamazoo, Michigan, U. S. A.

Allen Coil Testers

With Comparative Condenser Test

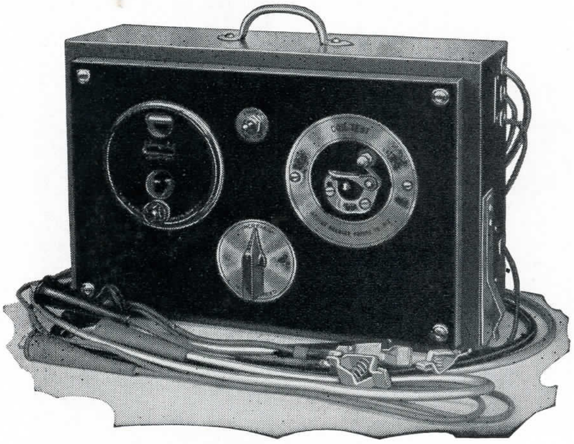
LOCATE IGNITION TROUBLES "ON" or "OFF" the CAR

Model E-145



Shipping weight, 20 lbs. Size, 14½"x9¼"x5"

Model E-146



Shipping weight, 16 lbs. Size, 14½"x9¼"x5"

DIFFERENCE IN DESIGN BETWEEN E-145 AND E-146

The construction differences between the E-145 and E-146 Coil Testers is that the E-145 uses a larger spark gap with built-in comparative coil switch which enables an instantaneous comparison of the spark intensity of like coils and at all speeds. This permits greater accuracy in testing than is possible with the E-146. The cases of both testers are the same and either fits on the portable stand.

FEATURES

1. The E-145 and E-146 test coils and condensers "ON" or "OFF" the car, and spark plugs and ignition cables while the car motor is operating.
2. Different capacity condensers can be tried until the proper size for the coil being tested is found. New condensers can be checked before installation on the car or before being placed in stock.
3. In making car tests the car battery and wiring can be used. This is advisable and an advantage.
4. Large impressive testers with black panel and red body.

DESCRIPTION

1. Variable speed battery-operated 6-volt motor controlled by a rheostat. Single lobe cam on motor shaft.
2. Standard set of adjustable breaker points.
3. Bakelite enclosed spark gap with special alloy electrodes, equipped with static point. Gap calibrated 0-10 millimeters.
4. Neon tube is located in bakelite housing. Its flashes make it easy to detect coil missing. Also used to test spark plugs and ignition cables.
5. Comparative coil switch on E-145 tester controls both the primary and secondary coil circuits. Makes instantaneous comparison between coils possible. VERY IMPORTANT.
6. Leads all permanently connected and of sufficient length for car testing.
7. Red case and black panel. Both sheet steel. Chrome carrying handle.

A PORTABLE STAND

For tests with either the E-145 or E-146 on the car or in all types of automotive stores it is convenient to have it mounted on the portable stand (shown below) which is equipped with wheels on the two rear legs and with a wheeling handle.

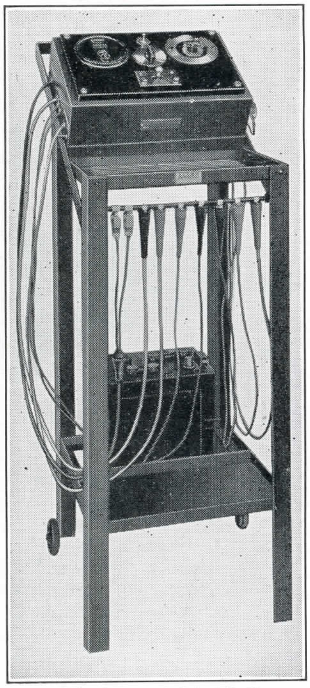
The tester is placed in the metal frame so that it can be removed if desired, and its angle is such that the spark gap and Neon tube are always in plain view.

The leads are of sufficient length to reach car units without removing them. When not in use leads can be clipped to the insulated rod provided for this purpose.

The frame of stand is angular steel, welded at all joints. The wheels are large and they turn easily.

The front compartment of the tray is arranged to hold tools or extra electrical parts; the rear compartment supports the battery.

The upper tray is for convenience when testing detached coils and condensers. The Stand Only is Model E-147.



Shipping weight, 77 lbs.
Size, 42"x15"x16"

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

Printed in U.S.A. 5-14-37

Supersedes all pages No. 23A
printed previous to 5-14-37

Coil Tester

Model E-193

For Car or Bench Tests

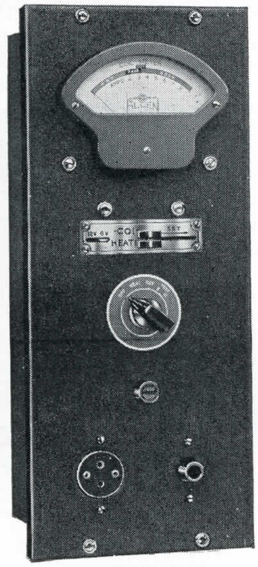
A Scientific
Coil Tester
with Coil Heater

Tests the Condition
of the Coil Windings

Eliminates Use of
Battery
Spark Gap
Breaker Points
Motor and Cam

Coil Specifications
Unnecessary

Operates from
110 Volt 50 or 60
Cycle Line



Patent Applied For
14½" High, 6" Wide, 4⅝" Deep
Shipping weight, 15 lbs.

The E-193 Coil Tester operates on an entirely new testing principle, utilizing a high frequency radio circuit to determine the condition of both the primary and secondary coil windings. If any of the turns of either the primary or secondary are shorted, ground, or open, the meter reads in the bad zone.

FEATURES

1. Fan shape 3¾" moving coil meter. Bakelite case.
2. Meter Dial calibrated "Good", "Fair" and "Bad".
3. Built-In Coil Heater with clock control mechanism. Heats 6 or 12 volt coils.
4. Selector switch with four positions—"Off", "Heat", "Set" and "Test".
5. Case attractively finished. Carrying handle at top.

Volt-Amp Tester

Model E-192

For Volt, Amp., and Resistance Tests

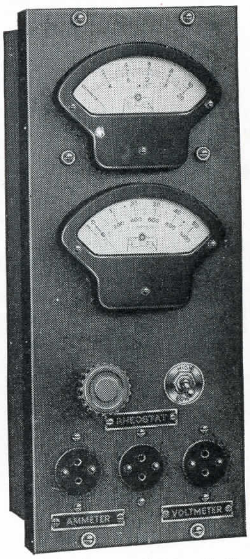
D'Arsonval
Moving Coil
Type Meter

Carbon Pile
Rheostat

TESTS

Horns
Starters
Batteries
Generators
Cut-Out Relays
Voltage Regulators
Current Limit Relays
Condition of Breaker Points

Carrying
Handle at Top



14½" High, 6" Wide, 4⅝" Deep. Shipping weight, 11 lbs.

The E-192 Volt-Amp Tester is used to test the units listed above, as well as checking voltage drop and current draw in all circuits. The meters are extremely accurate and of sufficient range to take care of all types of testing.

FEATURES

1. Moving Coil Meters with two-color dials on silver background. Ammeter scale 0-10, 3-0-50 and 0-1000. Voltmeter 0-1, 0-10 and 0-50.
2. Switch permits using either 0-10 or 0-50 voltmeter scale without changing polarized plugs.
3. Carbon Pile Rheostat with sufficient capacity to handle both passenger car and bus generators.

ALLEN NEON TIMING LIGHT

MODEL
E-22

5" long, 2⅛" Dia. Shipping weight, 1½ lbs.

PRINCIPLE OF OPERATION

The Neon Flash principle is the most accurate method of timing a motor. One lead attaches to No. 1 spark plug and the other to ground. With engine running the light is held close to the flywheel housing peek-hole. The Neon flashes are then checked against the flywheel markings, which indicate the piston position at the time firing occurs. The Distributor can then be retarded or advanced until the Neon flashes are perfectly synchronized with the markings on the flywheel. This scientific, sensitive instrument is a necessity in every Service Station where precision Tune-Up work is performed.

Easy to Disassemble to Replace Neon Tube

CHECKS

Governor Action — Synchronism — Ignition Cables
Spark Plugs — Ignition Timing — Distributor Cams
Shaft Sprung Condition — Shaft Excessive Play

FEATURES

1. The brilliant flashes of the specially designed Allen Neon Bulb enables the operator to easily read the markings on either the flywheel or the balancer. This brilliancy is also important when checking governor action, distributor shaft and cam action.
2. Flash strength indicates condition of H.T. circuit.
3. Bakelite case light in weight and easily handled.
4. Compact design permits getting into close spaces and on many cars also permits resting light on the motor while testing.
5. Leads are extra long so as to reach any part of the motor. Socks protect operator from shock.

F-44 Renewal Neon Tube........**$2.30**

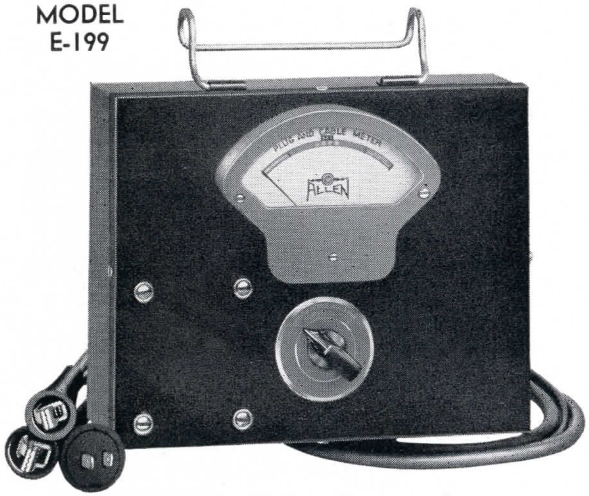
Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

ALLEN SPARK PLUG TESTERS

"Checks Plugs Under Actual Firing Conditions"

MODEL
E-199



Shipping Weight 15 lbs. Size 8½"x7"x3"

THE
SPARK PLUG
SALESMEN

That Locate

LEAKAGE TO GROUND
DEFECTIVE INSULATORS
ELECTRODE DETERIORATION

●

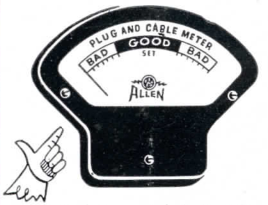
ELIMINATES GUESSWORK
IN SPARK PLUG AND CABLE TESTING

A NEW DEVELOPMENT IN TESTING THAT IS ENTIRELY DIFFERENT

10,000 MILES

Spark Plug manufacturers advocate changing plugs every 10,000 miles in order to improve engine performance and economy. The Allen Testers are the only devices that SHOW WHEN insulators have deteriorated to the extent that replacement is advisable.

Driving habits and motor design affect the number of miles a plug will perform satisfactorily and now it is possible to determine from an actual operating test, graphically shown on a meter dial the condition of the plugs, and why they should be changed sometimes in less than 10,000 miles. SHOW CAR OWNERS!



DIAL MARKED "GOOD" and "BAD"

EXCLUSIVE ALLEN FEATURE!

Shows car owners When and Why they should buy New Spark Plugs

CABLES, ROTOR AND CAP

Leakage in high tension cables, rotors and distributor caps robs current away from the plugs, causing a weak spark with insufficient heat to properly ignite the mixture. Previously a visual inspection had to be depended upon to locate this trouble that now can be SHOWN on a meter dial. The test can be made either with the engine running or idle, and provides a method to show car owners when new cables are required.

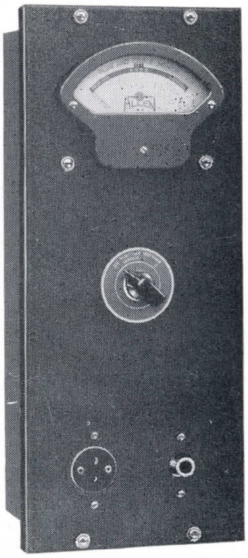
FEATURES

1. Operate from 110 volt, 50 or 60 cycle line.
2. Coil current is not bled away from plug, which operates at maximum temperature, approximately 1,200° Fahrenheit, during test.
3. Only two leads required, one to plug and other to ground.
4. Plug-In type H.T. socket on E-194 and testing prod with insulated handle protects operator from shock. Leads of E-199 permanently connected to tester.
5. Moving Coil Meter with three color 3¾" dial on a silver background. Bakelite case. "Good" and "Bad" zones simplify readings.
6. Four position selector switch controls all tests and turns tester off.
7. Ignition cables tested for leakage, grounds and high resistance.
8. Rubber insulators on bottom of cases and carrying handle at top.

TWO MODELS

The Models E-194 and E-199 are constructed exactly the same, except for the shape of the cases and that the E-199 leads are permanently connected while the E-194 are the plug-in type.

The E-194 is used in the E-400 series of complete motor testers and while it can be purchased separately, it is recommended that service stations buying a spark plug and cable tester ONLY purchase the model E-199, as it is more compact and handier to use. Also its price is less.



E-194 Shipping Wt. 11 lbs.
Size 14½"x6"x4⅝"

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

Printed in U.S.A. 6-19-37

Supersedes all pages No. 25A printed previous to 6-19-37

ALLEN TUNE-UP TESTERS

E-190 CONTACT ANGLE TESTER

E-190 Contact Angle Tester.
Shipping Wt., 11 lbs.

Available for
110 Volt 50 or 60 Cycle
Also 6 Volt Battery

CHECKS

Degrees of Dwell
of Breaker Points

Condition of
Contact Surfaces

All Tests Made
with Engine
Running

Has Four Scales
on Meter

Tests All
Type Distributors

Carrying Handle
at Top

The purpose of the Contact Angle Tester is to check the gap at the breaker points by determining the closed period (degrees of dwell). This enables very much closer adjustments than are possible with a thickness gauge, as in one case the measurement is made electrically, insuring accuracy, and in the other it is a mechanical operation, depending on the mechanic's ability and the difficulties of accurate measurements in places that are often almost inaccessible. TESTS V-8 FORD DISTRIBUTORS.

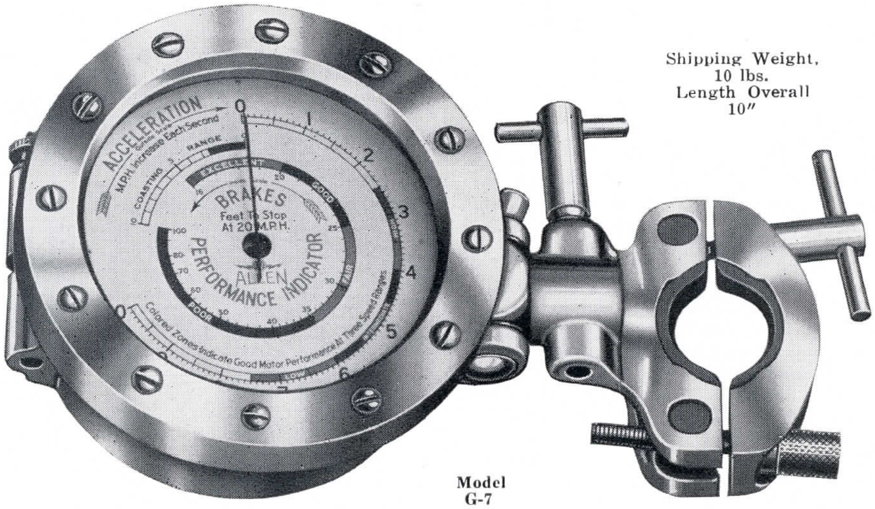
FEATURES

1. Moving Coil Meter with four scales in color on etched dial with silver background. Three lobe scale for 6 cylinder cars with double breakers, four lobe for 4 and 8 cylinder, six lobe for 6 and 12 cylinder, and eight lobe for 8 cylinder single breaker and 16 cylinder.
2. Available for 6 or 110 volt current. Specify when ordering.
3. Four position "Selector Switch" controls all tests.
4. Unnecessary to detach car wiring. Only two connections—distributor and ground.
5. Rheostat adjusts meter needle to adjust line.

PERFORMANCE INDICATOR

A ROAD DYNAMOMETER

Tests Acceleration (H. P.) and Deceleration (Brakes)
Clamps On Steering Post. No Other Attachment Required



Shipping Weight,
10 lbs.
Length Overall
10"

Model
G-7

DESCRIPTION

The purpose of the Performance Indicator is to test **acceleration** and **deceleration** of a vehicle, which readings will, when checked against the Allen Specifications, determine the condition of the engine.

By use of an equation furnished with the tester, actual H.P. developed can be determined. It also checks the ability of a car to coast with the clutch disengaged and determines the effectiveness of the brakes by testing the feet required to stop at 20 M.P.H.

It attaches to the steering column and is so designed that it can be placed at the right, left or underneath.

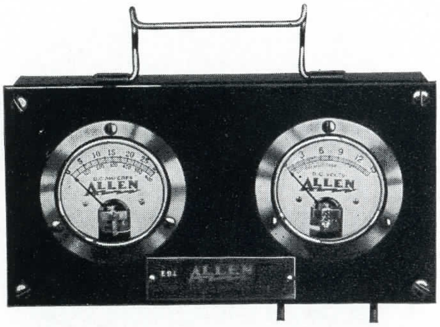
FEATURES

1. Constructed of Bakelite with aluminum holding brackets.
2. Quick acting clamp enables easy attachment.
3. Swivel construction permits locating in any position. Bowl turns in holding clamp so that zero mark is always at top of dial.
4. Dial in two colors on silver background.
5. Passenger Car Specifications furnished for tests at 30 M.P.H., which enable testing on city streets. Exact condition of engine can be determined.
6. Brake scale calibrated with color bands to denote poor, fair, good and excellent condition.
7. Operated by a pendulum suspended in oil sealed compartment.

ALLEN TESTERS

Build a Motor Tune-up Business

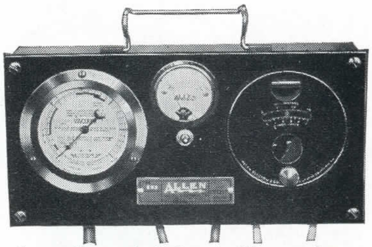
VOLT-AMP TESTER, MODEL E-91



The E-91 Volt-Amp Tester can be used to test horns, starters, batteries, generators, and relays. The ammeter scale is 0-50 and 0-1000. Voltmeter scale is 0-15. A two-prong plug on the detachable ammeter leads prevents reverse readings. Voltmeter leads are permanently attached. Finished bright red with black panel, chrome meters, carrying handle to hang on tie rod. Size 5″x 10¼″x2½″. Shipping weight, 10 lbs.

VACUUM, CONDENSER AND HIGH TENSION MOTOR TESTER, MODEL E-93

Equipped with Vacuum Gauge, Condenser Tester, and Adjustable Spark Gap with Neon Tube. Size 6″x14¼″x 5¼″. Shipping weight, 15 lbs.



DESCRIPTION AND SPECIFICATIONS

A.C. CONDENSER TESTER: Operates from an ordinary lamp socket and locates "open" and "shorted" condensers and those lacking capacity by means of subjecting them to 350 volts of A.C. current, secured through a step-up transformer. This voltage is sufficient to puncture weak insulation but will not damage condensers in good condition

Specifications: Meter dial, designed with words "OPEN" and "SHORTED," immediately indicates defective condensers. Push-button automatically discharges condenser being tested and shuts off A.C. supply when button is released. Tests can be made on or off the car.

HIGH TENSION TESTER: Same as Model E-18. See below.

VACUUM GAUGE: Same as G-8. See description Page 28A.

GENERAL DESCRIPTION: Unit finished in bright red with black panel. Equipped with carrying handle to hang on the tie rod of the car.

SYNCHRONIZER, MODEL E-10

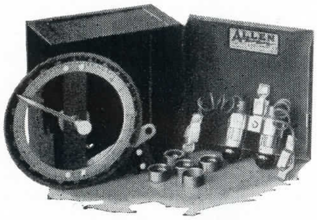
A UNIVERSAL TOOL FOR USE "ON" OR "OFF" THE CAR

CHECKS

Cam Wear
Bent Shafts
Worn Bushings
and
Gap Adjustment

SYNCHRONIZES

Twin Ignition
and
Two-Arm
Single Ignition
Distributors



Packed in a Metal Box
Shipping weight, 2 lbs.

When a distributor is equipped with two sets of breaker points, they must make and break in the proper relation to each other. Otherwise the motor will not run perfectly, which results in poor fuel economy and missing at high speeds.

FEATURES

1. Circular Dial graduated 0 to 360 degrees and calibrated 6 and 8 for six and eight cylinder cars.
2. Supporting bracket mounts on distributor and holds the dial rigidly parallel.
3. Five bushings to make distributor shaft extension universal. Held to shaft by set screws.
4. Movable pointer rotates with distributor shaft.
5. Two lamps, a bracket and necessary wires with clips are furnished.

VARIABLE RHEOSTAT, MODEL E-29

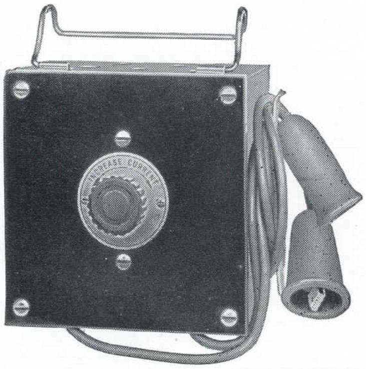
May be used with any equipment which includes an accurate reading ammeter and voltmeter.

A variable carbon pile is mounted in a well ventilated steel case which includes a handle for suspending from the radiator tie rod. Bakelite control knob.

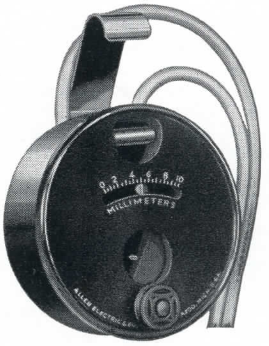
Width ....5½″
Height ....4″
Depth ....2⅝″

Places a Variable Load in Charging Circuit, for Testing Voltage Regulators or Voltage Drop

Shipping Wt. 6 lbs.



HIGH TENSION TESTER, MODEL E-18



This High Tension Tester provides a variable means of placing a load on the ignition system to determine trouble in the plugs, cables, coil, distributor cap and rotor, and all under actual operating conditions. Perfectly insulated through use of Bakelite. Coil misses audible for several feet.

SPECIFICATIONS

1. **Neon Tube:** Flashes indicate condition of ignition cables and plugs. Coil misses easily detected.
2. **Adjustable Spark Gap.** Calibrated in millimeters with spark gap contained in bakelite housing, which acts as sounding board, making sparks audible for several feet. Electrodes are removable and easy to keep in proper adjustment.
3. **Hook:** Mounted at back of tester permits hanging at any convenient place.

Supplied complete with all leads. Diameter 4⅛″ and Depth 1¾″. Shipping weight, 3 lbs.

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

Printed in U.S.A. 1-15-38

Supersedes all pages descriptive of above products printed previous to 1-15-38.

ALLEN GAUGES

VACUUM TESTER

WITH FUEL PUMP SCALE

COMPRESSION TESTER

WITH COMPRESSION RATIO SCALE

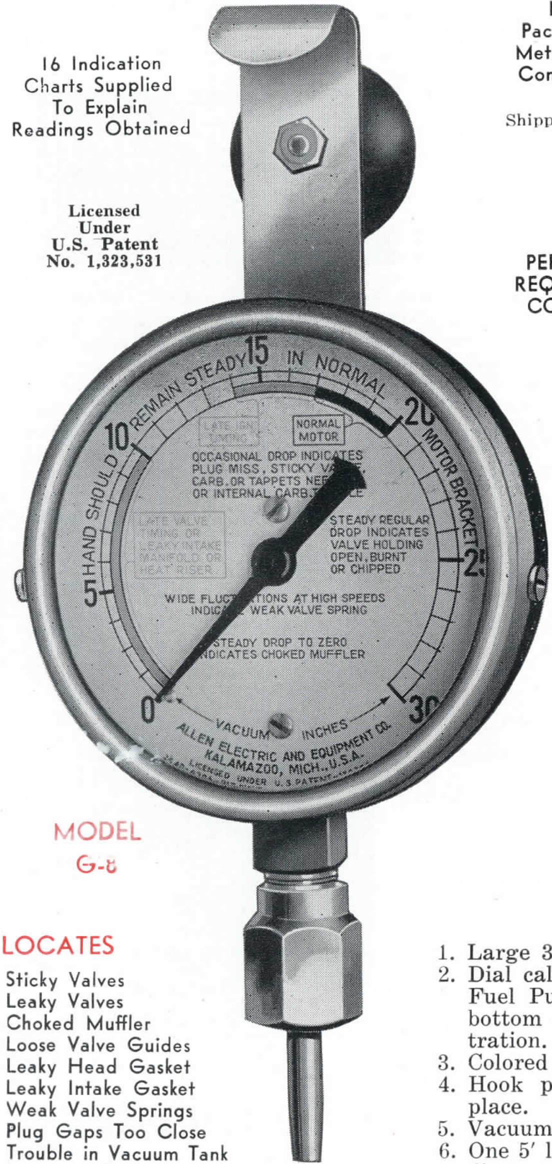
16 Indication
Charts Supplied
To Explain
Readings Obtained

Licensed
Under
U.S. Patent
No. 1,323,531

Both Testers
Packed in Hinged
Metal Boxes Which
Contain Necessary
Fittings

Shipping weight, 4 lbs.

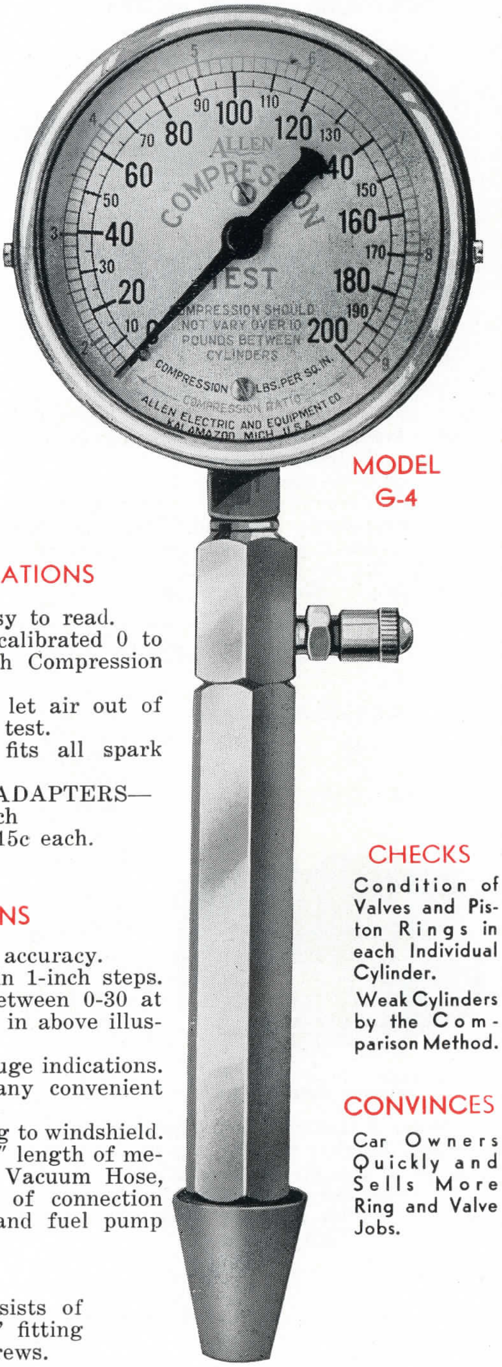
EFFICIENT
MOTOR
PERFORMANCE
REQUIRES GOOD
COMPRESSION


HAND SHOULD REMAIN STEADY IN NORMAL
MOTOR BRACKET
0
5
10
15
20
25
30
LATE IGN TIMING
NORMAL MOTOR
OCCASIONAL DROP INDICATES PLUG MISS, STICKY VALVE, CARB. OR TAPPETS NEED ADJ. OR INTERNAL CARB. TROUBLE
LATE VALVE TIMING OR LEAKY INTAKE MANIFOLD OR HEAT RISER
STEADY REGULAR DROP INDICATES VALVE HOLDING OPEN, BURNT OR CHIPPED
WIDE FLUCTUATIONS AT HIGH SPEEDS INDICATE WEAK VALVE SPRING
STEADY DROP TO ZERO INDICATES CHOKED MUFFLER
VACUUM INCHES
ALLEN ELECTRIC AND EQUIPMENT CO. KALAMAZOO, MICH., U.S.A.
LICENSED UNDER U.S. PATENT

MODEL
G-8

LOCATES

Sticky Valves
Leaky Valves
Choked Muffler
Loose Valve Guides
Leaky Head Gasket
Leaky Intake Gasket
Weak Valve Springs
Plug Gaps Too Close
Trouble in Vacuum Tank
Improper Carburetor Adjustment
Troubles in Fuel Pump or Line
Valve Tappets Out of Adjustment
Incorrect Valve or Ignition Timing


ALLEN COMPRESSION TEST
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
COMPRESSION SHOULD NOT VARY OVER 10 POUNDS BETWEEN CYLINDERS
COMPRESSION LBS. PER SQ. IN.
COMPRESSION RATIO
ALLEN ELECTRIC AND EQUIPMENT CO. KALAMAZOO, MICH. U.S.A.

MODEL
G-4

G-4 SPECIFICATIONS

1. 3½″ gauge. Easy to read.
2. Two Color Dial calibrated 0 to 200 lbs. and with Compression Ratio Scale.
3. Release valve to let air out of gauge after each test.
4. Rubber adapter fits all spark plug holes.

REPLACEMENT ADAPTERS—
50c each
Lots of six—15c each.

CHECKS

Condition of Valves and Piston Rings in each Individual Cylinder.

Weak Cylinders by the Comparison Method.

CONVINCES

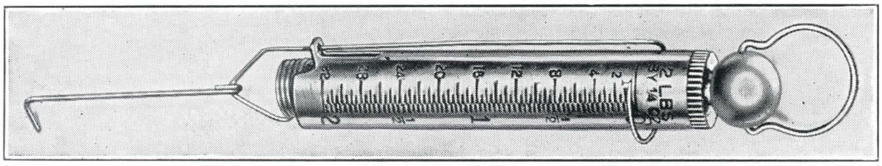
Car Owners Quickly and Sells More Ring and Valve Jobs.

G-8 SPECIFICATIONS

1. Large 3½″ Gauge—extreme accuracy.
2. Dial calibrated 0-30 inches, in 1-inch steps. Fuel Pump Scale 0-5 lbs. between 0-30 at bottom of scale. Not shown in above illustration.
3. Colored markings explain gauge indications.
4. Hook permits hanging at any convenient place.
5. Vacuum cup permits attaching to windshield.
6. One 5′ length of small, one 4″ length of medium, and one 4″ length of Vacuum Hose, together with complete set of connection adapters for both vacuum and fuel pump tests are supplied.

G-9 SET ADAPTERS—For car running tests on fuel pumps. Consists of following adapters: ⅛″ pipe, $\frac{7}{16}$″ x 20, ½″ x 24, (2) ½″ x 20, "T" fitting with hose attached, exhaust pressure fitting, and 12 Parker Kalon screws.

Spring Tension Gauge, G-3



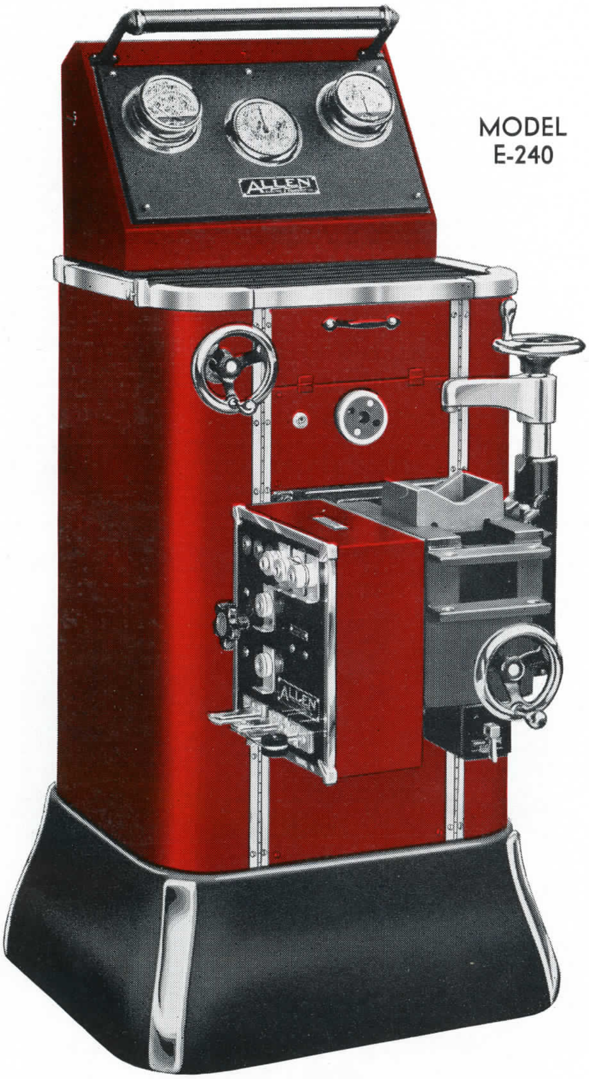
Accurately measures the spring tension of starter and generator brushes, and breaker point contact arms. Weak, or stiff spring tension is the cause of many troubles which, in the majority of instances, cannot be located except by using an instrument of this type. Scale is graduated in ¼ ounce steps from 0 to 32 ounces. Length over all 10½″. Length of wire hook 6″. Diameter of scale ¾″.

Supersedes all pages descriptive of Allen Gauges printed previous to 1-15-38.

THE ALLEN ELECTRICAL LABORATORY

A HIGH SPEED TEST BENCH

For Testing Generators, Starters and Magnetos



59″ High, 23″ Wide, 43″ Deep. Shipping weight, 790 lbs.

MOTOR SIZES AND SPECIFICATIONS

The motors used in the Electrical Laboratory operate at a fixed speed of 1750 R.P.M., at which speed their maximum rated horse power is developed, so that regardless of the R.P.M. that the generator is being driven, it receives the full power of the motor.

Four sizes of motors are available, namely, 1½, 2, 3 and 4 horse power in either single or three phase. It is recommended that three phase be used whenever possible due to the lower list price and greater stability of operation.

●

TWELVE IMPORTANT FEATURES

- √ Variable Carbon Rheostat for Use in Loading Large Generators and in Testing Voltage Regulators. 1000 Watt Capacity.
- √ An Adjustable Holder (not shown) for Voltage Regulators mounts on the table top.
- √ Driving Speed Range 500 to 5,500 R.P.M. on 60 Cycle. Maximum Speed 4600 on other Cycles.
- √ Mechanical Type Torque Test 0-100 lbs.
- √ Illuminated Meter Panel with 4½ inch Meters. Ammeter 0-5, 0-50, 0-100, 0-1000. Voltmeter 0-10, 0-20, 0-100.
- √ Hold Down Clamp Position Permits Testing Voltage Regulators Without Removal from Generator.
- √ Elevating Table Adjustable for all Height Ranges Through Use of Hand Wheel.
- √ Motor Fixed Speed Type 1750 R.P.M. with Driving Range Controlled Through Variable Pitch Pulleys Which Permits Full Power of Motor to Generator at ALL SPEEDS.
- √ Test Any Size or Voltage Generator. Four Motor Sizes Available in Either Single or Three Phase. Six and Twelve Volt Battery Switch on Test Panel.
- √ Angle Steel Construction with Rubber Mounting for Motor and Meters. Vibrationless. Finished Bright Red with Chrome Trim.
- √ Nine Point Adjustable Spark Gap for Magneto Testing. Priced Extra.
- √ Reduction Drive Fixture for Testing Impulse Coupled Magnetos. Priced Extra.

ADVANTAGES OF THE ALLEN DRIVE

All makes of test stands previous to the model E-240 used either two or four pole motors. The four pole types are satisfactory at speed ranges below 3000 R.P.M. but are limited to a maximum speed of 3600 R.P.M. Two pole types will operate at high speeds but are subject to constant changes as the load varies. The Allen method overcomes all of the difficulties of both two and four pole motors.

SIZE MOTOR REQUIRED

1½ H.P. motor has sufficient power for testing generators of all six volt battery equipped vehicles.

2 H.P. motor has sufficient additional power for testing 12 volt generators where the maximum charging rate does not exceed 40 amperes.

3 H.P. motor has sufficient additional power for testing 12 volt generators where the charging rate does not exceed 50 amperes.

4 H.P. motor is required for all larger generators than those specified above.

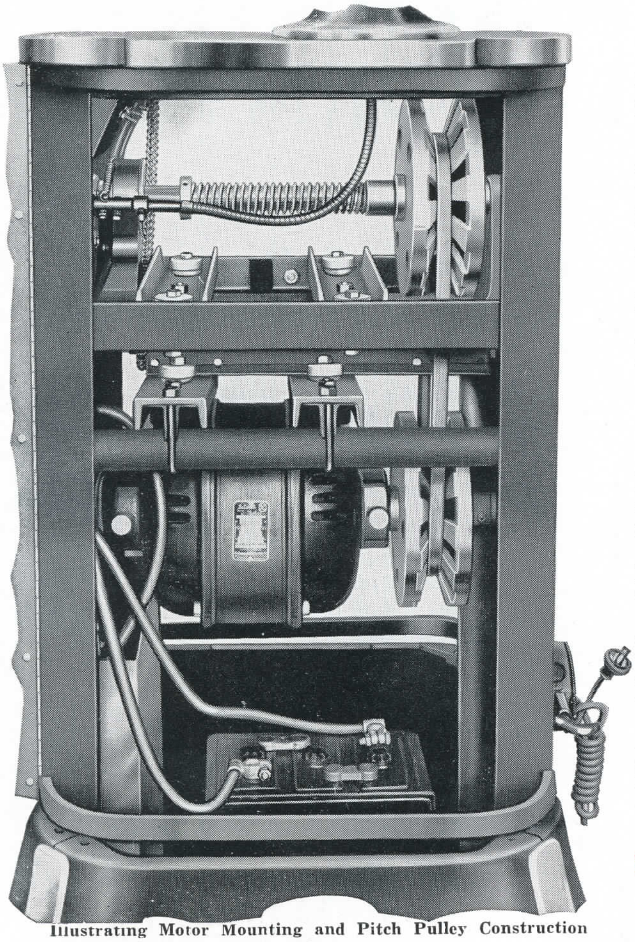
Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

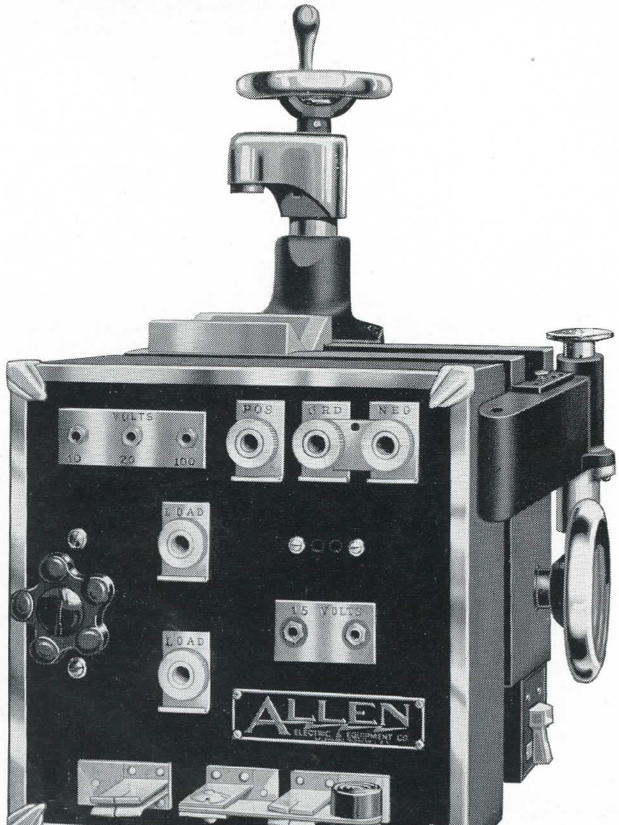
Printed in U.S.A. 6-16-38

Supersedes all pages 1 printed previous to 6-16-38.

ADVANTAGES OF ALLEN DESIGN



Illustrating Motor Mounting and Pitch Pulley Construction



Control Panel, Clamp Arm and Elevating Table

INTERNAL CONSTRUCTION

The opposite view illustrates the heavy angle steel frame construction in which the pitch pulleys are mounted on accurately ground shafts, which turn on ball bearings, eliminating loss of power.

The pulleys are designed to slide one into the other which changes their pitch diameter. When the upper set has a smaller diameter than the lower, the speed of the upper shaft is increased and vice versa. The pitch of the pulleys is controlled through a hand wheel.

Rubber mountings of the channels on which the motor is hung reduces vibration and noise. The bottom compartment holds two six-volt batteries, and the A.C. connections are made at a junction box on the rear of the E-240.

CONTROL PANEL MECHANISM

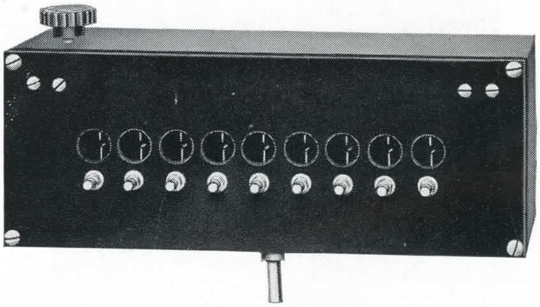
The view at the bottom left illustrates the Control Panel, Raising and Lowering Mechanism, Vee-Block and Clamping Arm and the Motor Control Switch, all of which are arranged into a compact assembly.

The clamping arm is adjustable to any height or position, enabling the testing of voltage regulators and relays without removal from the generator.

The height of the elevating table is hand wheel controlled and has sufficient range for mounting all types and sizes of generators and magnetos. The motor reversing switch is located below the hand wheel.

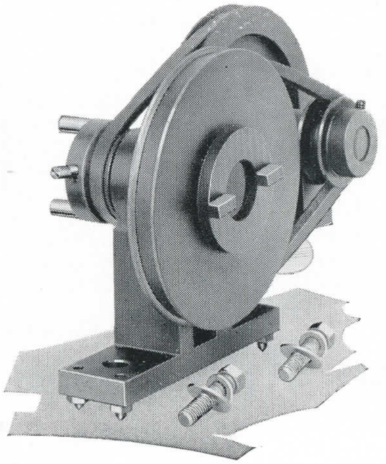
The panel contains all necessary connections, and either positive or negative grounded generators can be tested. A carbon pile rheostat is used in testing voltage regulators and the heavy duty knife closes the six or twelve volt circuit.

E-246 NINE POINT ADJUSTABLE SPARK GAP



The spark gap assembly mounts at the left hand corner of the E-240 table top directly in the line of vision of the operator. Nine leads are furnished to connect the gap to the magneto.

E-245 MAGNETO REDUCTION DRIVE FIXTURE



The magneto reduction fixture has a 10 to 1 reduction, which permits driving magnetos at 50 R.P.M. so that low speed operation and the action of impulse couplings can be checked. By removing a pin and shifting the fixture slightly, the magneto is directly coupled to the E-240 main drive.

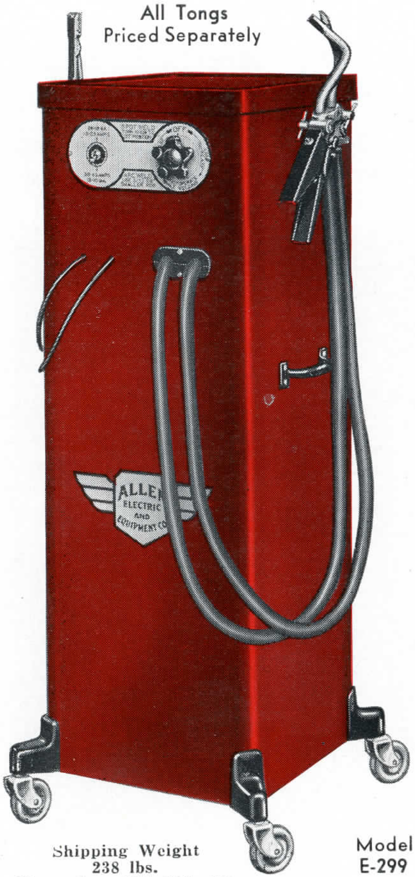
Allen Spot and Arc Welders

A Selection of Three Models

MODEL E-299

For Sheet Metal Spot Welding
and 15 to 45 Amp. Arc Welding

All Tongs
Priced Separately



Shipping Weight
238 lbs.
Dimensions 15"x15"x48"

Model
E-299

MODEL E-296

For Sheet Metal Spot Welding
and 15 to 150 Amp. Arc Welding

●

ALL MODELS FOR USE ON
220 VOLT 50 or 60 CYCLE

●

ADVANTAGES OF SPOT WELDING

1. Saves up to 75% in time in replacing metal tops.
2. Welds made in same manner as used in original manufacture.
3. Warpage of metal eliminated.
4. Refinishing time reduced.
5. Spots made at rear of seams which eliminates squeaks.
6. Welds all sheet metal up to a combined thickness of 1/8".
7. Height of welders allow 6' leads to extend through windows.
8. Switch conveniently located on hand clamp.
9. Copper tongs removable from hand clamp.

●

DIFFERENCE BETWEEN E-296, E-298 and E-299

The cabinets of Models E-296, E-298 and and E-299 are identical in size, and the E-296 (not illustrated) is the same general appearance as the E-299 except that the arc welder has detached leads and plug-in sockets. Twelve arc welder heat stages are available on the E-299, and the E-296 has thirty.

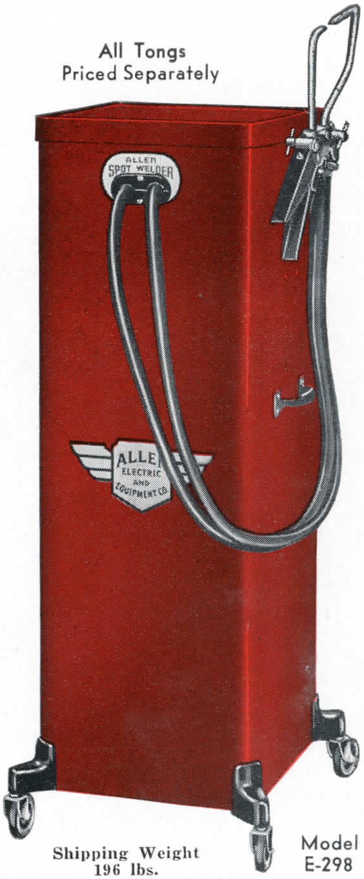
Head shield, electrode holder, leads and electrodes are furnished with the E-296 and E-299.

E-296—Shipping Weight, 282 lbs.

MODEL E-298

For Sheet Metal
Spot Welding Only

All Tongs
Priced Separately



Shipping Weight
196 lbs.
Dimensions 15"x15"x48"

Model
E-298

SPOT WELDING

Spot welding is the process used in the original manufacture of automobile bodies and practically all other products constructed of sheet metal, for the reason that tighter joints are secured and at considerably lower cost for labor and material.

Allen Spot Welders are used for replacing metal tops, door panels, quarter panels and the repairing of fenders and other types of sheet metal. The units are very easy to operate and with an hour or two of practice perfect spots can be made. It is only necessary to become familiar with the amounts of pressure required on the handles of the clamp and the length of time to apply the heat.

Allen Welders are not recommended for production work, as no more than 100 spots are possible without cooling the tongs.

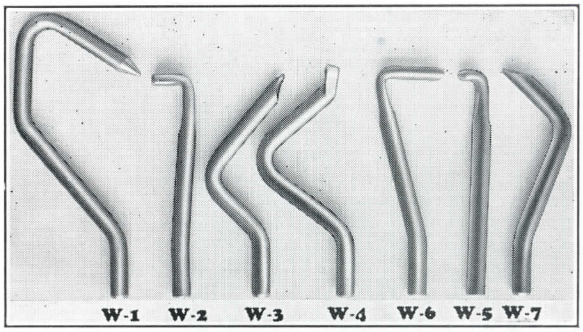
Leading car and body manufacturers recommend the use of Allen Spot Welders.

SPECIAL TONGS

Allen will furnish quotations on special length or style tongs upon receipt of dimensional information, or will furnish unmachined rod in any length desired.

5/8" Unmachined Copper Rod.......................Price per Inch $ .08

SPOT WELDER TONGS



Fisher Bodies require tongs W-1, W-2, W-3, W-4 and W-7.
Chrysler Corp., Packard, Graham and Hudson Bodies require tongs W-1, W-2, W-3 and W-4.
Ford Bodies require tongs W-3 and W-4.
Studebaker Bodies require tongs W-2, W-3, W-4, W-5, W-6 and W-7.
Willys Bodies require tongs W-2, W-3 and W-6.
Nash Bodies require all arc welding.

Tongs not included in price of welders. Specify separately types desired. See Price Sheet.

SEE FOLLOWING PAGE

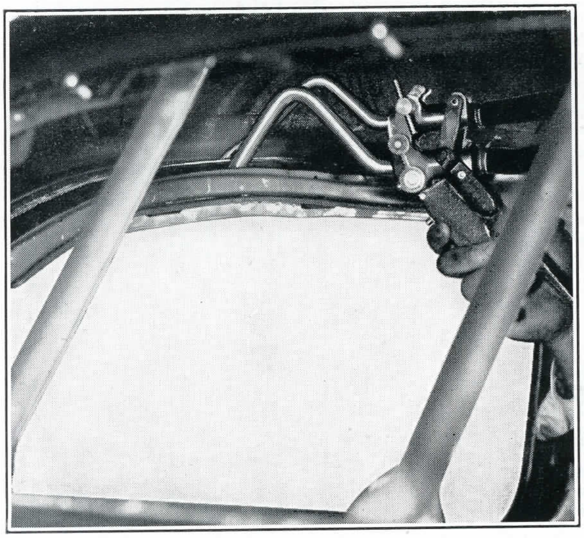
Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

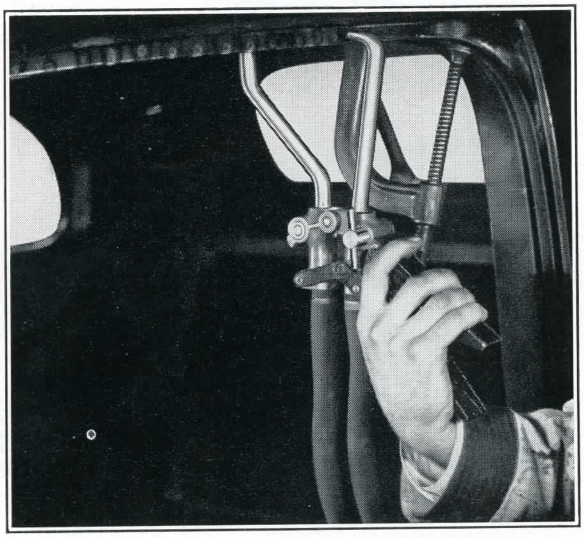
Printed in U.S.A.—5-20-38

REPLACING METAL TOPS

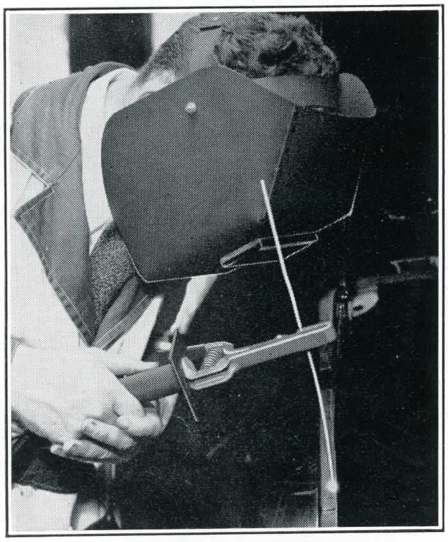
1. Before removing the damaged top, the body alignment should be carefully checked and re-aligned if necessary. This makes fitting the new top in place an easy procedure.
2. Remove the damaged top and clean all flanges with a sander.
3. Clean the flanges of the new top with thinner, fit and clamp tightly in place.
4. Spot weld the top to the windshield frame, making the spots about one inch apart.
5. Then spot weld the top to the rear window frame in the same manner as the windshield. See illustration below.
6. The top is then spot welded to the roof rail over the door openings, on first one side of the body and then the other. See illustration below.
7. The top flanges are then spot welded to the rear quarter panels, inside and over the window openings, on first one side of the body and then the other. See illustration below.
8. It is then only necessary to arc or acetylene weld the pillar posts and the rear quarter panel to the top on each side of the rear window and also along the front door opening.
9. When the arc welding is ground, sanded and filled with body solder, the job is ready for painting.



Spot welding a top to a rear quarter panel over the side window on the inside of the body. Note ease of performing this difficult operation. View is through the rear window.

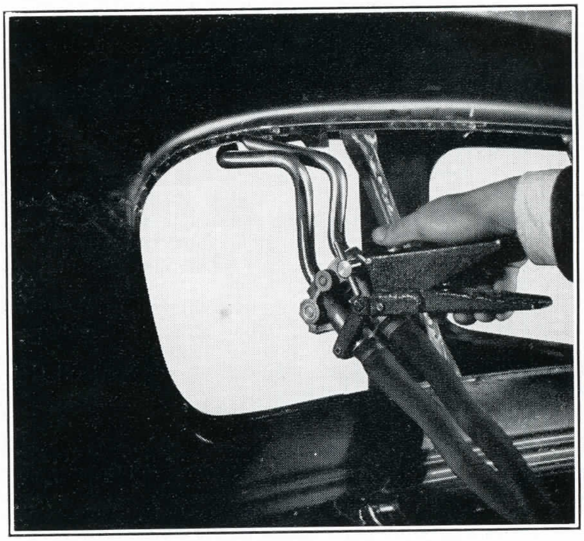


Spot welding a top to a roof rail over the door opening. The weld is made at the upper or lower flange portion or both and through three thicknesses of metal.



The illustration at the left is of a quarter panel being welded to a frame, which is an example of joining thin metal to thick. Allen's low heat range prevents burning away the thin metal on such jobs.

The arc welder of the E-296 or E-299 is used to weld pillar posts, cowl and also the top to the body opposite the rear window, which places cannot be spot welded.



Spot welding a top to a rear window frame. Tongs W-2 and W-3 are also satisfactory for this operation. Attaching a top to a windshield frame is done in the same manner.

ALLEN ELECTRIC SHOP

MODEL E-117

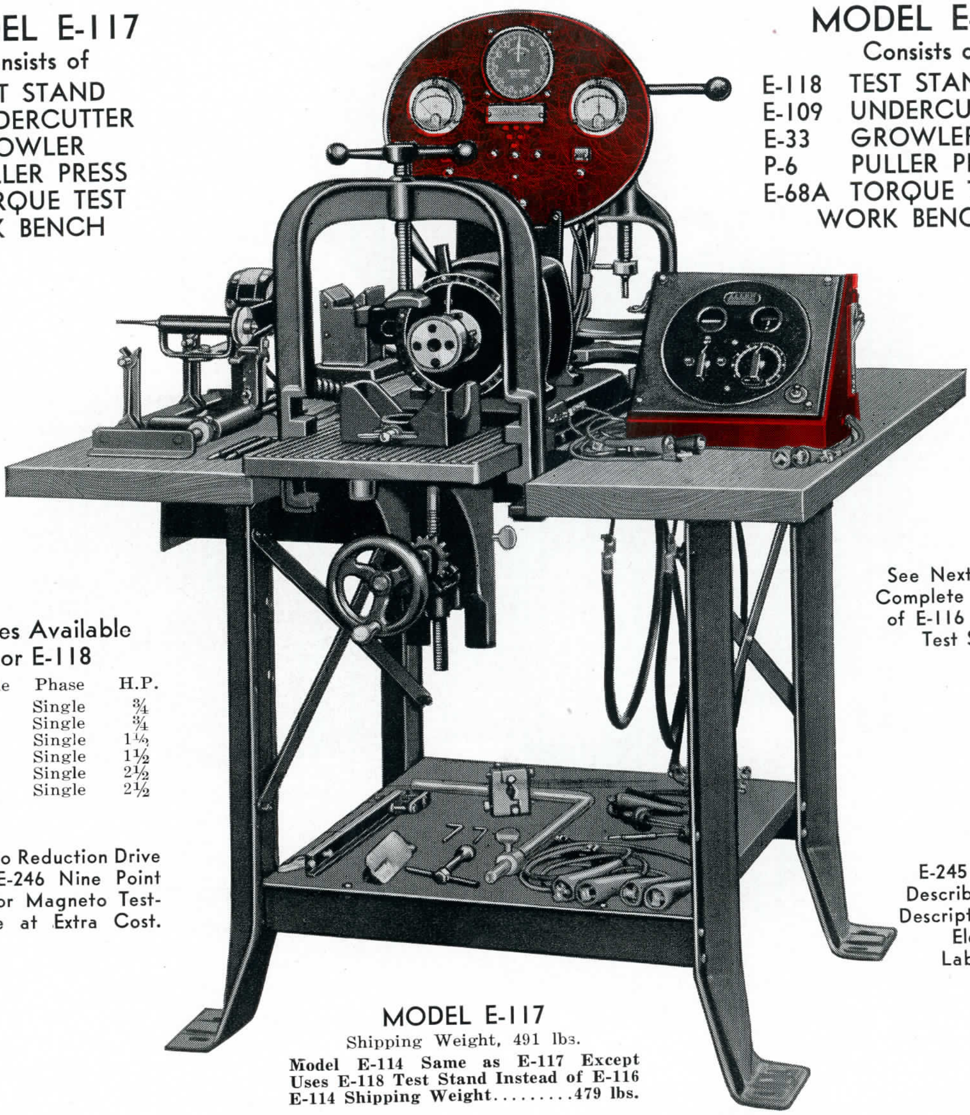
Consists of

E-116	TEST STAND
E-109	UNDERCUTTER
E-33	GROWLER
P-6	PULLER PRESS
E-68A	TORQUE TEST
	WORK BENCH

MODEL E-114

Consists of

E-118	TEST STAND
E-109	UNDERCUTTER
E-33	GROWLER
P-6	PULLER PRESS
E-68A	TORQUE TEST
	WORK BENCH



Motor Sizes Available E-116 or E-118

Volt	Cycle	Phase	H.P.
110-220	60	Single	¾
110-220	25	Single	¾
110-220	60	Single	1½
110-220	25	Single	1½
110-220	60	Single	2½
110-220	25	Single	2½

E-245 Magneto Reduction Drive Fixture and E-246 Nine Point Spark Gap for Magneto Testing Available at Extra Cost.

See Next Page For Complete Description of E-116 and E-118 Test Stands.

E-245 and E-246 Described on Page Descriptive of E-240 Electrical Laboratory.

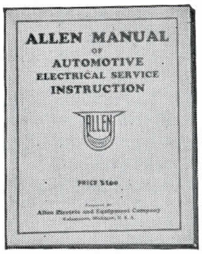
MODEL E-117

Shipping Weight, 491 lbs.

Model E-114 Same as E-117 Except Uses E-118 Test Stand Instead of E-116
E-114 Shipping Weight.........479 lbs.

COMPLETE ELECTRICAL SERVICE UNIT

ALLEN INSTRUCTIONAL MANUAL



The Allen Manual covers the entire electrical service field, such as "Trouble Shooting", "Testing", "Repair", and "Installation" of "All Circuits" and "All Electrical Units".

The Graphic Explanatory Charts enable quickly locating any type of trouble.

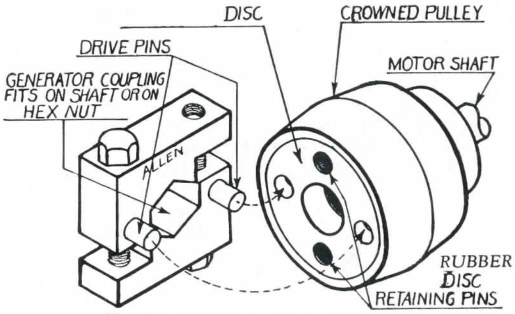
Unusual troubles such as flying shorts, grounds and opens are explained together with the correct method of locating and eliminating the difficulty.

The manual enables mechanics to quickly become skilled automotive electricians.

It is written in non-technical language and is so arranged and indexed that any desired information can quickly be found.

Furnished FREE with Allen Test Stands. Separately **$1.00.**

ALLEN QUICK CHUCKING DRIVE



No. 7 Compression Coupling

No. 2 Driver

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

Printed in U.S.A. 11-20-36

Supersedes all E-117 pages printed previous to 11-20-36

ALLEN UNIVERSAL TEST STANDS

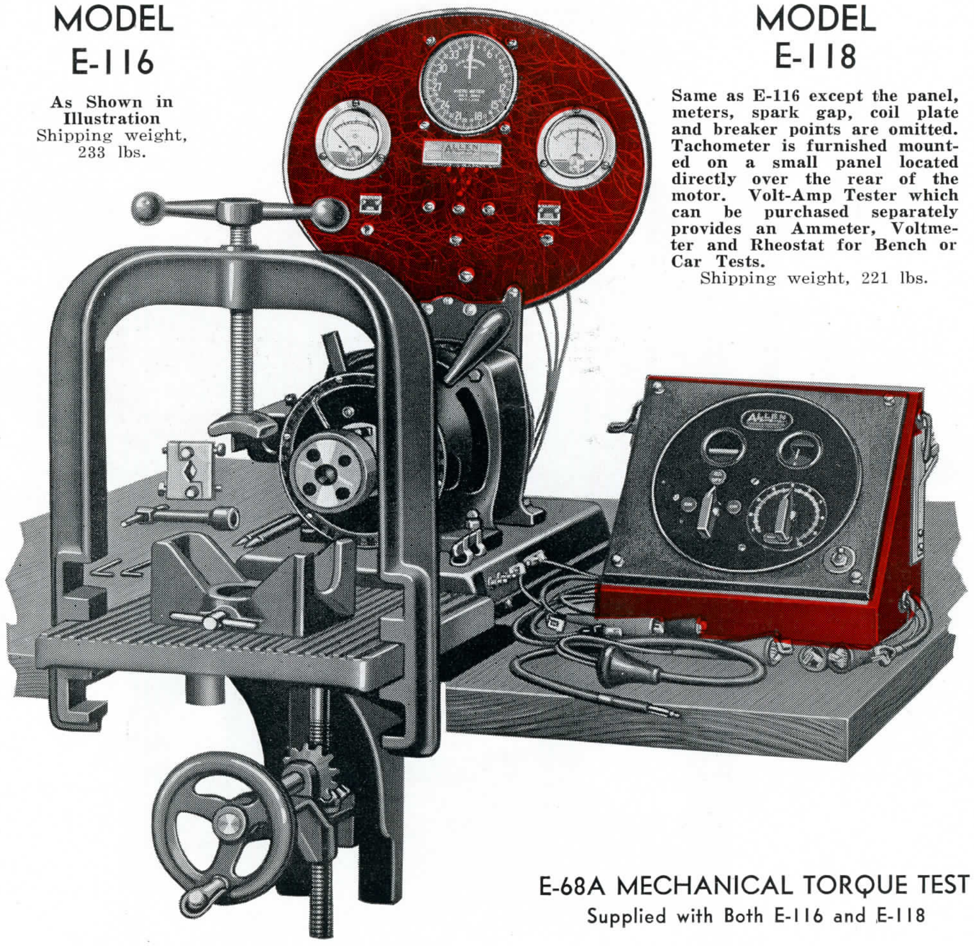
COMPLETE IN EVERY DETAIL. READ THE SPECIFICATIONS.

MODEL E-116

As Shown in Illustration
Shipping weight, 233 lbs.

MODEL E-118

Same as E-116 except the panel, meters, spark gap, coil plate and breaker points are omitted. Tachometer is furnished mounted on a small panel located directly over the rear of the motor. Volt-Amp Tester which can be purchased separately provides an Ammeter, Voltmeter and Rheostat for Bench or Car Tests.
Shipping weight, 221 lbs.



E-68A MECHANICAL TORQUE TEST
Supplied with Both E-116 and E-118

SPECIFICATIONS

Motor—Brush shifting type. Variable speed 300-3600 in either direction.

Meters—3″ moving coil with zero adjustment. Voltmeter 0-20. Ammeter 30-0-30. Milliampere scale 15-0-15 for coil secondary output test.

Tachometer—Mechanical. 300-3600.

Drive—Allen straight-line drive. All the power of the motor available to drive generator. Compression coupling of Allen design will handle round shafts up to one inch diameter and most hex. nuts.

Generator Vise—"V" block for all round generators. Elevating table, adjustable for all height ranges.

Rotary Spark Gap—Bakelite, graduated, 0 to 360°, invaluable for testing magnetos and distributors, and to **synchronize** 2 arm breakers.

Adjustable Spark Gap — Makes comparative coil tests. Molded bakelite with special alloy electrodes, equipped with static point. Gap calibrated 0-10 millimeters.

APPLICATIONS

Generators—Will handle all types and shapes of passenger car and light truck generators, even the older motor-generators of unusual size. Checks voltage and amperage of current output.

Distributors—(Held in E-121 Holder) are checked for contacts, automatic and vacuumatic spark advance, and synchronizes two arm breakers.

Coils and Condensers—A comparison test can be made between a coil and condenser known to be good and units that are questionable. This is accomplished by use of the comparative switch located on the adjustable spark gap.

Magnetos — Complete check which detects bent shafts, worn cams and sloppy bearings. E-245 Reduction Fixture and E-246 Nine Point Gap are important for magneto testing.

Cut-outs and Voltage Regulators — Tested under operating conditions. E-29 Rheostat required for Regulators.

Starters—Tested on E-68-A Mechanical Torque Test.

E-116 AND E-118 MOTOR SIZES AVAILABLE

Voltage	Cycle	Phase	Horse Power
110 or 220	Any	Single	¾, 1½, or 2½

Specify Voltage, Cycle and Horse Power of Motor When Ordering.

Allen Electric and Equipment Company
Kalamazoo, Michigan, U. S. A.

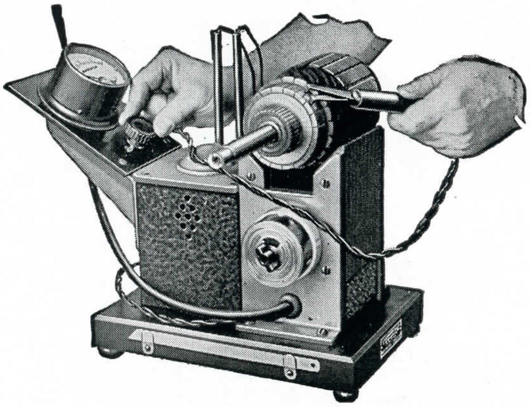
Printed in U.S.A. 11-20-36

Supersedes all E-116 pages printed previous to 11-20-36

ALLEN GROWLERS

TO ACCURATELY TEST ARMATURES FOR
OPENS — SHORTS — GROUNDS

E-32 UNIVERSAL GROWLER

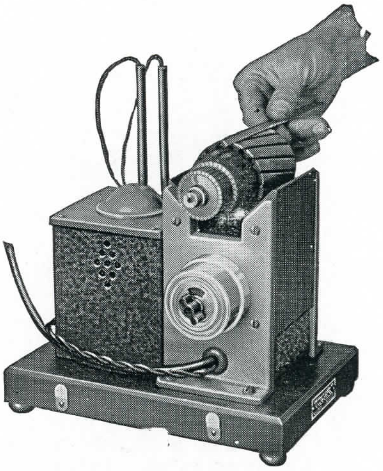


Used principally by larger Service Stations and Armature Winding Shops as complete instrument capable of testing any size of automotive armature. Will locate all troubles in winding, connections, coil spacing, insulation, etc.

E-32, Has Single Coil Winding. Also available with Double Coil Winding and Two Position Switch at slightly higher price.

Shipping weight, 40 lbs.

E-35 GROWLER



Growler E-35 is made of same efficient units as E-32. Complete as shown with lamp housing drilled to take meter bracket which can be added later.

E-35, Has Single Coil Winding. Also available with Double Coil Winding and Two Position Switch at slightly higher price.

Shipping weight, 31 lbs.

Models E-31, E-32, and E-35 test armatures from 1⅞″ to 6″ in diameter. E-30 and E-33 from 1½″ to 4″ in diameter.

FEATURES OF ALLEN GROWLERS

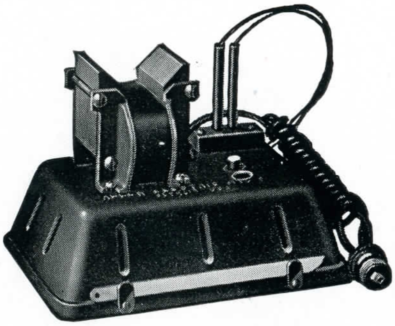
Test points carry additional 8 amperes current to blow out or indicate by smoke all ordinary grounds —exclusive Allen Feature.

(Patent applied for)

SIGNAL LAMP LIGHTS while Growler is switched on, giving absolute PROTECTION against burning out.

(Patent applied for)

E-30 GROWLER

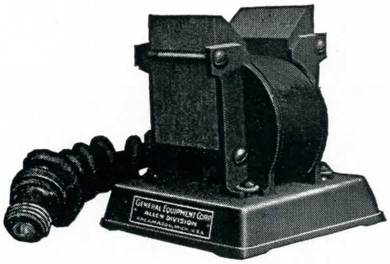


Base casting protects test light, and standard bulb can be used. When Growler is turned on the bulb lights so the operator will not leave Growler turned on. (Patent applied for.) Test prods carry heavy current which shows where ground is located. (Patent applied for.)

This Growler is approved by and shown in the service bulletins of Hudson, Chevrolet, and Studebaker.

Shipping weight, 17 lbs.

E-33 GROWLER



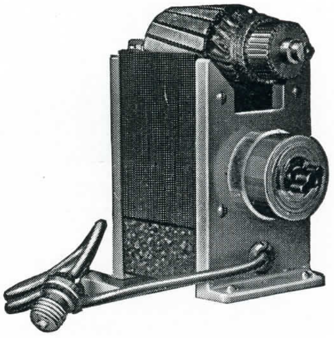
The Allen **E-33** Growler is the growler unit of the **Model E-30,** mounted on a base and furnished complete with lamp cord and plug.

It tests shorts and opens in armatures and supplies the need of the average service station. It is a compact, strong instrument at a very low price.

Y-50 Growler, same price as E-33, tests armatures from 1″ to 3″ in diameter.

Shipping weight, 8 lbs.

E-31 GROWLER



The **E-31** Growler is the growler unit only from the **E-32** Growler, mounted with enclosed switch and extension cord. It will handle armatures up to 6″ diameter.

The E-31 is not equipped with test prods or pilot light.

E-31 Has Single Coil Winding. Also available with Double Coil Winding at slighter higher price.

Shipping weight, 17 lbs.

E-31 Growler can be supplied with Rotary converter for use on D.C. current.

ALL GROWLERS CAN BE SUPPLIED IN ANY VOLTAGE OR CYCLE. THEY OPERATE ON A.C. CURRENT ONLY.

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

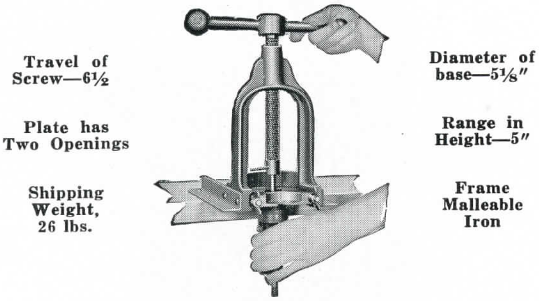
Printed in U.S.A. 11-20-36

Supersedes all growler pages
printed previously to 11-20-36

Allen Puller Press and Undercutter

PULLER PRESS

MODEL P-6

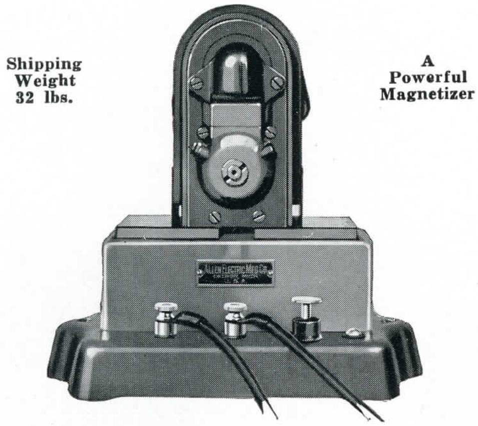


DESCRIPTION

The P-6 Press will quickly remove all types of bearings, gears, couplings, slip rings, clutches, commutators, bendix drives, inner races, etc. It is equipped with a steel hardened adjustable plate with two openings, one of which has a thin edge for bearings and gears and the other a thicker round edge for 201 type bearing inner races. **P-5-A Puller Press Plate can be purchased separately.**

Allen Magnetizer

MODEL E-36



OPERATES FROM A 6 VOLT BATTERY

The Allen E-36 is an unusually large and heavy charger, designed to charge a complete set of magnets without removing them from the magneto, and will of course, charge single magnets as well. This charger will put the most "kick" in a magneto and in the least time.

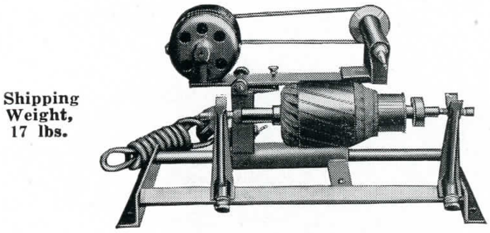
The magnetizer operates from a six volt battery, and comes complete with heavy No. 8 flexible leads and clips. The battery connections and polarity are plainly indicated.

The coils are of very heavy construction, thoroughly impregnated with insulating compound.

Can be supplied for operation from a 110 or 220 volt D.C. line at slight extra cost.

UNDERCUTTER

MODEL E-109



DESCRIPTION

The E-109 Undercutter enables accurate undercutting of the mica of generator armatures and speeds up the operation considerably over any other method. The depth and length of the cut is controlled through stops.

The motor operates from 110 volts A.C. or D.C. and drives at approximately 2200 R.P.M. Both centers and "V" blocks are furnished to hold armatures either with or without centers.

Ten saws, two of each of the following five sizes, are supplied—.015″, .020″, .025″, .030″ and .035″.

12 Replacement Saws, assorted sizes..........$3.60

Universal Radiator Test Plug Set

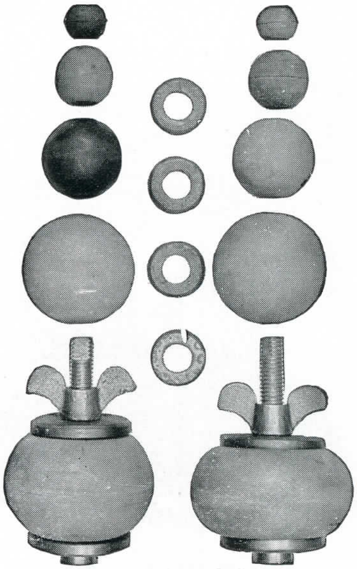
MODEL H-5

H-5 UNIVERSAL SET

This set will test all radiators. It consists of fourteen India rubber plugs, two each of the following sizes: ⅞″, 1″, 1⅛″, 1½″, 1¾″, 2″, and 2¾″. The plugs have a hole running through the center, through which the stems are inserted with a washer at each end. Twelve washers are supplied and two wing nuts.
Shipping Wt., 4 lbs.

H-7 Ford A and T Set

Consists of two plugs, size 1½″ and 1¾″; two stems, four washers, and two wing nuts.
Shipping Wt., 2 lbs.


H-5 Universal Set

H-6 CHEVROLET SET

Consists of six plugs, two each, sizes 1″, 1⅛″, and 1½″; two stems, four washers, and two wing nuts.
Shipping weight, 2 lbs.

H-9 UNIVERSAL FORD SET

Consists of four 1½″, one 1¾″ and four 1⅛″ plugs, four stems, ten washers, and four wing nuts.
Shipping weight, 2 lbs.

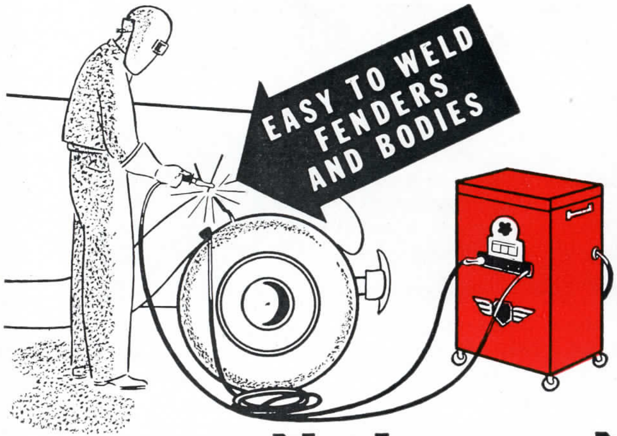
Allen Electric and Equipment Company

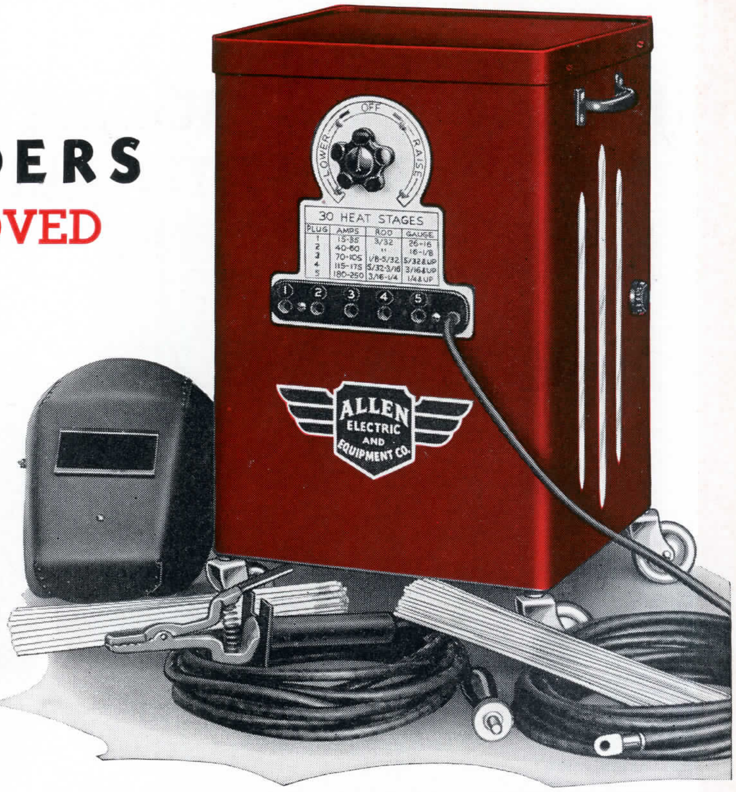
Kalamazoo, Michigan, U. S. A.

Supersedes all pages descriptive of above products printed previous to 11-20-36.

ALLEN
A. C. ARC WELDERS
UNDERWRITER APPROVED

ALL MODELS HAVE
30 HEAT STAGES


EASY TO WELD FENDERS AND BODIES


OFF
LOWER
RAISE
30 HEAT STAGES
PLUG AMPS ROD GAUGE
1 15-35 3/32 26-16
2 40-60 " 16-1/8
3 70-105 1/8-5/32 5/32&UP
4 115-175 5/32-3/16 3/16&UP
5 180-250 3/16-1/4 1/4&UP
1 2 3 4 5
ALLEN ELECTRIC AND EQUIPMENT CO.

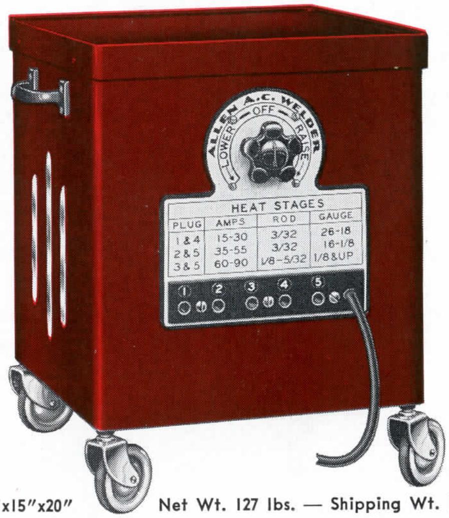
No Longer Necessary to Be an Expert Welder . . . Easy to Strike and Maintain Arc . . . LOW HEAT RANGE Exclusive Allen Feature

THREE SIZES

MODEL E-270 (Shown Above)
30 Heat Stages — 15 to 250 Amperes — 220 or 440 Volt.
Recommended for Industrial and Other Heavy Duty Welding.
Size 15¼″x15¼″x26″ — Net Wt. 196 lbs. — Shipping Wt. 249 lbs.

MODEL E-273 (Same appearance as E-270)
30 Heat Stages — 15 to 150 Amperes — 220 or 440 Volt.
Recommended for All Classes of Automotive Welding
Size 15¼″x15¼″x26″ — Net Wt. 174 lbs. — Shipping Wt. 233 lbs.

MODEL E-272 (Shown Below)
30 Heat Stages — 15 to 100 Amperes — 220 or 440 Volt.
Recommended for Light Metal and up to 5/32″ Thick



Size 15″x15″x20″ Net Wt. 127 lbs. — Shipping Wt. 153 lbs.

WELDING PROFITS

The use of an Allen A. C. Arc Welder (any model) means more shop revenue for you, because—

First, easy to weld fenders and bodies—low heat range prevents burning holes through metal.

Second, welding costs are less — approximately 6c per hour for current.

Third, time is saved—no preheating necessary.

Fourth, weld can be filed—easy to prepare job for repainting.

Fifth, warpage reduced to a minimum—heat is concentrated at one point.

Sixth, no up-keep cost—welder will last for years.

Seventh, excessive dismantling unnecessary—engine or other parts seldom have to be removed.

Eighth, appearance reconditioning is a volume business and wreck jobs are profitable.

ACCESSORIES SUPPLIED

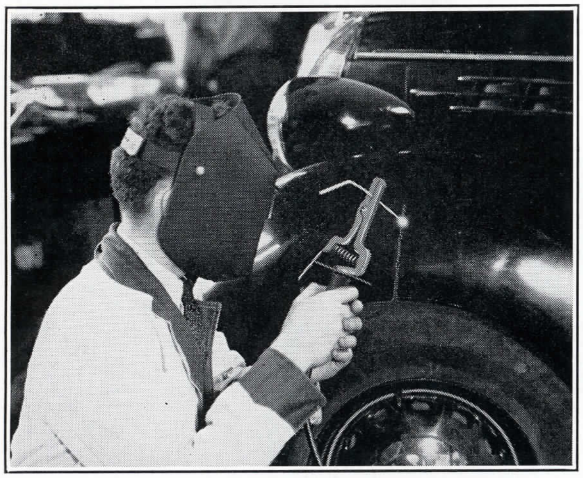
The accessories furnished with each model Allen Welder consists of:—

1 Head Shield
1 20 ft. 3 wire A. C. Cable.
1 20 ft. Ground Cable with Lug
1 20 ft. Electrode Cable
1 Electrode Holder
10 lbs. A. C. Electrodes (Assorted Sizes)

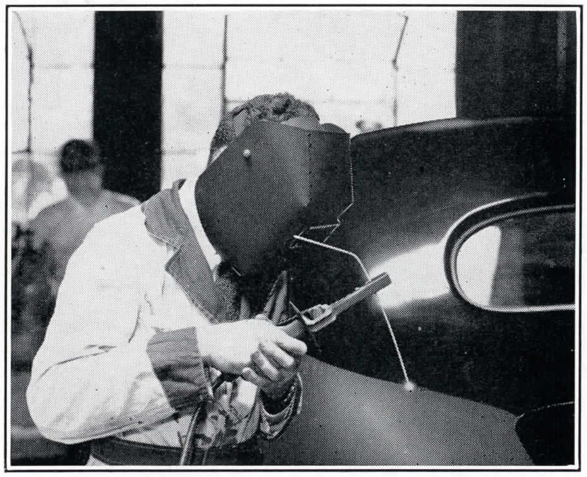
If extra lengths of cables, hand shields, helmet lens, electrode holders, etc. are desired, they can be furnished at additional cost.

Allen Electric and Equipment Company
Kalamazoo, Michigan, U. S. A.

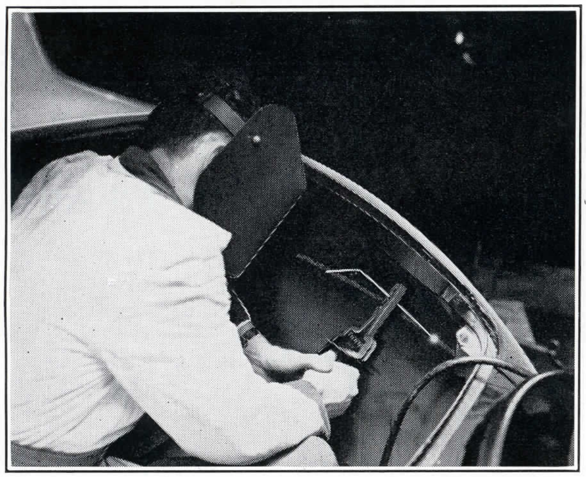
FENDERS AND BODIES ARE EASY TO WELD WITH ALLEN A. C. WELDERS



When welding a cracked fender, it is unnecessary to afterwards sink and torch solder as the weld deposits through the fender so the top surface can be filed smooth.



The above illustrates how new quarter panels are installed. This can be done without warpage which eliminates sinking and soldering. It is then only necessary to grind smooth and refinish.



Above illustration shows how quarter panels can be welded to rear wheel housings and without warping the sheet metal where it joins the thicker metal. This feature saves time.

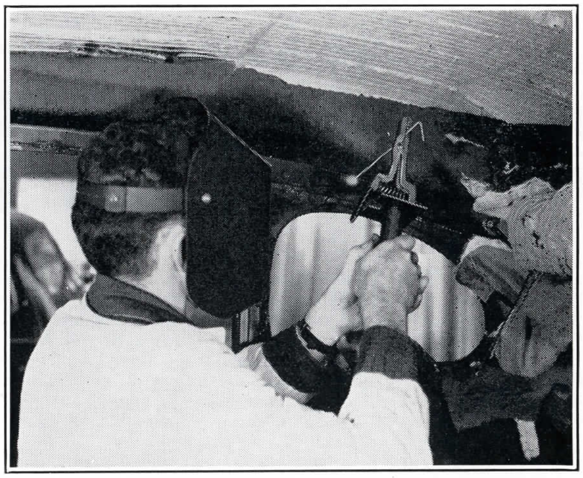
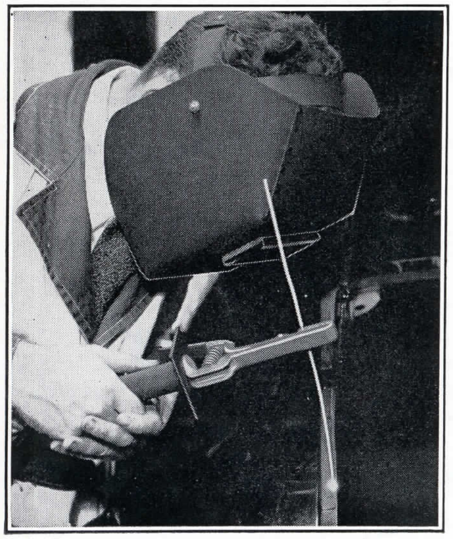
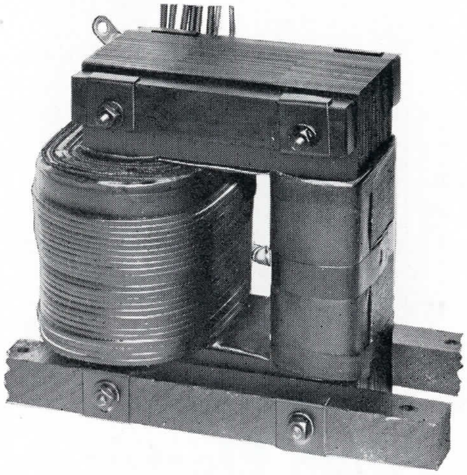


Illustration of welding a metal top to a quarter panel on the inside above the window frame. Note the absence of warpage and burning of the metal. An easy weld to make.



The illustration at the left is of a quarter panel being welded to a frame, which is an example of joining thin metal to thick. Allen's low heat range prevents burning away the thin metal on such jobs.



Allen Welder Transformer showing one leg wound and other open. See description next page.

CONSTRUCTION FEATURES OF ALLEN A. C. WELDERS

ALLEN BUILT

All models of Allen A. C. Welders are manufactured complete in the Allen plant at Kalamazoo, Mich., which enables close control and inspection of each part entering into the finished products. This means an added protection to purchasers against the possibility of divided responsibility when welders are constructed of parts purchased from other sources.

THE TRANSFORMER

The transformer is constructed of high grade iron laminations pierced at each corner so that the clamp bolts extend through them and exert an equal pressure at all points. This provides a solid construction which eliminates vibration and noise.

The transformer coils are wound of rectangular copper wire directly on the laminated core under high pressure, which makes a solid compact assembly.

Each layer of the coils is insulated from the next layer with asbestos.

Ventilating passages are built into the coil windings to dissipate heat with the result that any model of Allen Welder can be used at maximum capacity continuously without overheating.

THE REACTANCE

The reactance coil of the Models E-270 and E-273, which is constructed the same as the transformer, serves the purpose of reducing the voltage of the transformer as soon as the arc is struck, which provides smooth operation of the arc.

In the Model E-272 the reactance is wound as a part of the transformer.

HEAT STAGES

More heat stages are provided with Allen Welders than any other make, which means that the exact heat required is available for every job.

CONTROL SWITCH

The control switch is connected into the primary circuit of the transformer where it carries a maximum current of 55 amperes when using the Model E-270 at its full capacity of 250 amperes. Usually the switch carries considerably less than 55 amperes, although its capacity is 125 amperes.

Through its use a very fine regulation of the current can be obtained which makes possible the low heat stages.

PLUG-IN SOCKETS

The tapered plug-in sockets are mounted in molded bakelite and so constructed that a tight joint is always secured.

Taps from the secondary winding of the transformer are connected to the sockets in the correct proportion to obtain an adjustment of the current sufficiently fine so that this, together with the control switch, enables getting any heat desired. This makes unnecessary a constant shifting of the plug from one socket to another while welding.

THE CABINET

The cabinet is scientifically designed to insure a maximum draft around the transformer for cooling purposes instead of perforating the case with a quantity of holes or louvers, which are sometimes added with no thought as to their purpose. The rear of the case is insulated to prevent induced currents from heating it.

AMPERE RATE AND ROD SIZE

The stencil on the front of each model of welder contains information as to the proper plug sockets and rod size to use for each welding operation, depending on the thickness of the metal to be welded.

USES FOR ALLEN WELDERS

Axles
Boat Hulls
Bodies
Boilers
Bridges
Buildings
Bumpers
Chains
Conveyors
Cornices
Cylinder Heads
Dredges
Drive Rods
Farm Machinery
Fenders
Firepots
Frames
Furnaces
Gears
Gutters
Housings
Iron Fences
Iron Pipes
Iron Rails
Iron Wheels
Lathes
Milling Machines
Molds
Motor Blocks
Pulleys
Road Machinery
Roofs
Shafts
Sheet Metal
Smokestacks
Steel
Tanks
Tools
Tractors
Trucks

THE ABOVE LISTS ONLY A FEW APPLICATIONS.

A. C. ARC VS. GAS WELDING

Gas welding which was very popular in the past is being succeeded by A.C. arc welding for many purposes and for a number of reasons.

First, acetylene gas yields a large flame that is not easily controlled or concentrated. The result is an excess quantity of heat to be dissipated which causes warpage and temper changes in the metal being welded. An A.C. weld of above 6000 degrees Fahrenheit can be concentrated in a small spot which eliminates warpage.

Second, the concentrated heat of an A.C. welder makes possible welding thick metal to thin without burning away the thin metal.

Third, the small arc of an A.C. welder permits interior body welds without removing an excessive amount of trim material.

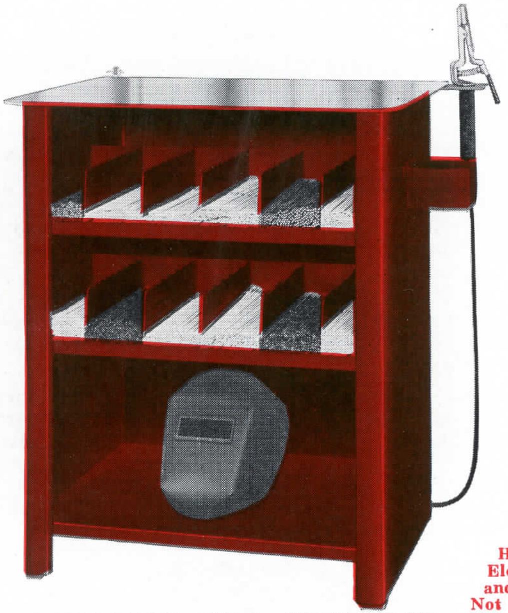
Fourth, A.C. welds are soft and ductile and can be filed or sanded, while gas welds are brittle and hard.

Fifth, A.C. welds are strong and will not break, which makes possible welding spring steel, such as bumpers.

Sixth, the cost of A.C. Welding is not over 10% as much as with acetylene, as gas costs are usually from $2.00 to $3.00 per hour.

ALLEN WELDING CABINET

PROVIDES STORAGE SPACE FOR ELECTRODES BY SIZES



Helmet, Electrodes and Holder Not Supplied.

Model E-279. Shipping Weight, 103 Lbs.

STURDY AND CONVENIENT

The Allen Welding Cabinet is constructed of sheet steel sides and back with extra heavy shelves for holding a quantity of electrodes. Ten compartments permit storing the rod by type and sizes so that it is readily available as needed.

A false back at the rear of the shelves prevents the rod from sliding too far into the cabinet, and on the bottom shelf can be stored helmets, hand shields, clamps, body file, fender hammers, dollies, etc.

The bracket at the right hand end of the table top provides a place for the electrode holder so that it is conveniently ready for use.

The box for used electrode tips is detachable.

FEATURES

1. Dimensions: 36″ high, 30″ wide, 19″ deep.
2. Table Top: One piece steel, ⅛″ thick.
3. Ten Rod Sections—Wing nut for Ground Cable.
4. Electrode Holder Bracket and Welding Tip Box.
5. Strong—Convenient—Attractive.

ALLENWELD ELECTRODES

For All Makes and Types of Welders

Allen Electrodes are not the ordinary dipped type that frequently give off noxious fumes and are difficult to use, but instead are composed of harmless organic materials applied by the expensive extruding process, which assures uniformity of coating and a minimum of "off-center" rods.

Ease of striking and maintaining the arc is a feature of Allen Rod, which when used with the low current Allen Welders enables beginners to make perfect welds on all thicknesses of metals with very little practice. The tensile strength of both A.C. and D.C. rod for steel is 65,000 to 70,000 lbs.

DO NOT USE INFERIOR ROD WITH ALLEN WELDERS

NET PRICES OF ACCESSORIES AND PARTS

Head Shield	$ 6.50
Hand Shield	4.00
Electrode Holder	4.50
Welding Lens No. 10 (Colored)	2.00
Welding Lens Protective Cover (Clear Glass)	.10
20 Foot Electrode Flexible Cable (With Holder)	10.95
20 Foot Ground Cable (With Copper Lug)	6.70
Extra Welding Cable (Per Foot)	.30
3 Wire Power Supply Cable (Per Foot)	.35
No. 21 Copper Clip with Rubber Sock for A.C. Connection	.85
No. 23 Rubber Sock Only for No. 21 Clip	.35
No. 33 Copper Clip for Ground Connection	1.35

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

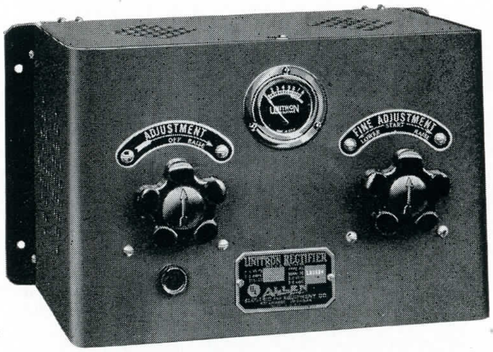
Printed in U.S.A.

Unitron Battery Chargers

APPROVED BY THE UNDERWRITERS

Model E-15

6 Amp. Capacity 12 Batteries



Bakelite Control Dials

Top Panel Hinged

Compact Efficient Design

FEATURES

1. Unitron E-15 will charge 12 six volt batteries (or equivalent) at 6 amperes or less.
2. Low first cost. Economical operation. Bulb guaranteed 1,200 hours.
3. Ventilated bulb socket.
4. Push button type switch lights bulb.
5. Hinged top panel provides accessibility for inspection and cleaning of working parts.
6. Control of charging rate in fractional amperes.
7. Easy to install and operate.

SPECIFICATIONS

1. Two molded Bakelite Adjusting Dials control charging rate. One for coarse control and the other for fine.
2. Control fingers troubleproof design with extra heavy contact buttons mounted on bakelite panels.
3. Bulb protected by 15 ampere fuse.
4. Large oversize Transformer. Laminations of highest grade iron. Transformer coil wound with rectangular wire. Most efficient design possible.
5. Accurate Ammeter.
6. Well ventilated Metal Case. Designed for wall or bench mounting. Size 13"x9"x9⅜" deep.

ONE BULB FURNISHED

E-15 For operation on 110 volt, 50 or 60 cycle.
Shipping weight, 36 lbs.

E-15 For operation on 110 volt, 25, 30 or 40 cycle.
Shipping weight, 46 lbs.

Uses Type No. F-60 Unitron Bulb................$4.00
Replaces Tungar No. 189049 or Rectigon No. 289416 bulb

E-1 and E-6 UNITRONS WITH BULB

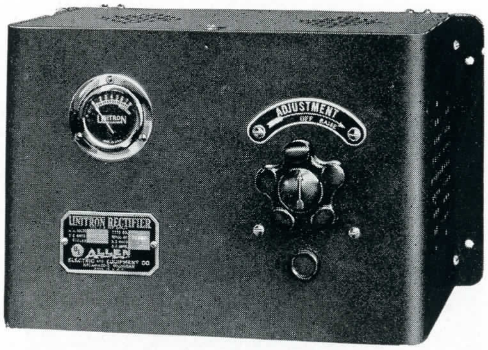
The E-6 Unitron will charge six and the E-1 twelve six volt batteries (or equivalent) at 6 amperes or less.

E-1 For operation on 220 volt, 50 or 60 cycle.
Shipping weight, 67 lbs.

E-6 For operation on 220 volt, 50 or 60 cycle.
Shipping weight, 64 lbs.

Model E-8

6 Amp. Capacity 8 Batteries



FEATURES

1. Unitron E-8 will charge 8 six volt batteries (or equivalent) at 6 amperes or less.
2. Low first cost. Economical operation. Bulb guaranteed 1,200 hours.
3. Ventilated bulb socket.
4. Push button type switch lights bulb.
5. Hinged top panel provides accessibility for inspection and cleaning of working parts.
6. Control of charging rate in fractional amperes.
7. Easy to install and operate.

SPECIFICATIONS

1. One molded Bakelite Adjusting Dial permits fine control of charging rate.
2. Control fingers troubleproof design with extra heavy contact buttons mounted on bakelite panels.
3. Bulb protected by 15 ampere fuse.
4. Large oversize Transformer. Laminations of highest grade iron. Transformer coil wound with rectangular wire. Most efficient design possible.
5. Accurate Ammeter.
6. Well ventilated Metal Case. Designed for wall or bench mounting. Size 13"x9"x9⅜" deep.

ONE BULB FURNISHED

E-8 For operation on 110 volt, 50 or 60 cycle.
Shipping weight, 36 lbs.

E-8 For operation on 110 volt, 25, 30 or 40 cycle.
Shipping weight, 44 lbs.

Uses Type No. F-60 Unitron Bulb................$4.00
Replaces Tungar No. 189049 or Rectigon No. 289416 bulb

COST OF CHARGING

The following figures are the approximate costs of charging **per battery** at 5c per K.W. for A.C. current and apply to all type Unitrons and Battery Shops.

1 batt	27 c	5 batts	10½c	9 batts	7½c
2 batts	18 c	6 batts	8½c	10 batts	7¼c
3 batts	15 c	7 batts	8 c	11 batts	7 c
4 batts	12½c	8 batts	7¾c	12 batts	6¾c

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

Supersedes all Unitron pages
printed previous to 9-15-38.

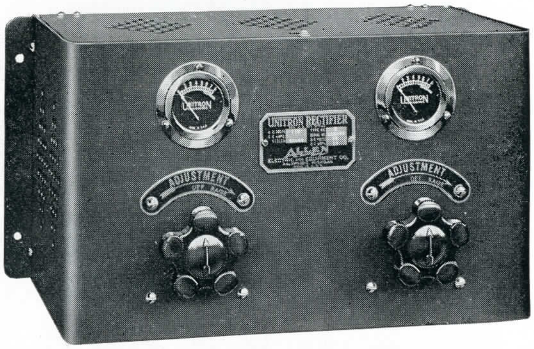
Unitron Battery Chargers

FULL WAVE

Model E-7

6 Amp. Capacity 12 Batteries
12 Amp. Capacity 6 Batteries

Specify Voltage and Cycle of All Type Unitrons When Ordering



FEATURES

1. Unitron E-7 will charge 6 six volt batteries (or equivalent) at 12 amperes or less, or 12 batteries at 6 amperes.
2. Economical to operate. Bulbs guaranteed 1,200 hrs.
3. Low first cost and upkeep. Only replacement parts are the bulbs. Full wave Rectification.
4. Easy to install and operate. Quiet in operation.
5. Control of charging rate in fractional amperes.
6. Switch built in left hand control dial.

SPECIFICATIONS

1. Bulbs mounted in horizontal position. Protected by 15 ampere fuses.
2. Two Adjusting Dials control charging rate.
3. Large, efficient Transformer. Center and outer laminations interwoven. Transformer coil wound with rectangular wire.
4. Large Reactance Coils make charging rate steady and lowers transformer heat.
5. Two accurate 0 to 8 Ammeters.
6. Bulbs protected by 15 ampere fuse.
7. Well ventilated Metal Case. Designed for wall or bench mounting. Size 16″x9″x9⅜″ deep.

TWO BULBS FURNISHED

E-7 For operation on 110 volt, 50 or 60 cycle.
Shipping weight, 51 lbs.

E-7 For operation on 220 volt, 50 or 60 cycle.
Shipping weight, 57 lbs.

E-7 For operation on 110 volt, 25, 30 or 40 cycle.
Shipping weight, 57 lbs.

Uses Type No. F-60 Unitron Bulb..........$4.00
Replaces Tungar No. 189049 or Rectigon No. 289416 bulb

HALF AND FULL WAVE RECTIFICATION

Any rectifier employing two bulbs such as the E-2 or E-7 Unitron, is a **full wave** charger, and where only one bulb is used such as the E-15 Unitron, it is **half wave.** When only one side of a two bulb rectifier is operating, the machine is **half wave.**

A **half** wave rectifier allows just half of the alternations to pass into the charging circuit, and the other half are not drawn from the line at all, therefore do not register on the power meter.

The **efficiency** of both full and half wave rectifiers when the same number of batteries are being charged at the same ampere rate, is identical, and the **cost of charging** per battery is the same.

The only reason for full wave rectifiers is to obtain a 12 ampere charging rate.

Model E-2

6 Amp. Capacity 24 Batteries
12 Amp. Capacity 12 Batteries

FEATURES

1. Unitron E-2 has unusual flexibility. One side can be used separately to charge one line of batteries at a 6 ampere rate or less. Both sides can be used to charge two lines of batteries at a 6 ampere rate or less. One line of batteries can be connected to the charger so that they receive the current from both bulbs. In this way ONE DAY CHARGING service can be rendered. Another hook-up permits charging three lines at three different rates, one slow, one medium, and one fast.
2. Economical to operate. Efficiency 86% at full load. Costs no more to charge one battery with the E-2 Charger than with the smaller sized Unitrons.
3. Low first cost and upkeep. Only replacement parts are the bulbs. Bulbs guaranteed 1,200 hours.
4. Easy to install and operate. Quiet in operation.
5. Bulbs light individually by use of two switches. One built into each lower control dial. Exclusive features of Unitrons. In other makes of chargers, both bulbs turn on or off simultaneously.

SPECIFICATIONS

1. Large, efficient, ruggedly built Transformer. Center and outer laminations interwoven. Transformer coil wound with rectangular wire.
2. Large Reactance Coils make charging rate steady and lowers transformer heat.
3. Two accurate 0 to 8 Ammeters.
4. Heavy knife switches which light the bulbs built into each lower control dial. These replace snap switches.
5. The two upper control dials regulate the charging rate in fractional ampere steps. This permits exact rates.
6. Perforated Metal Case allows free air circulation. Size 15″x14″x7½″. Hinged doors on each side. Designed for wall mounting.
7. Bulbs mounted in horizontal position. Protected by 15 ampere fuses.

TWO BULBS FURNISHED

E-2 For operation on 110-220 volt, 50 or 60 cycle.
Shipping weight, 100 lbs.

E-2 For operation on 110-220 volt, 25, 30 or 40 cycle.
Shipping weight, 109 lbs.

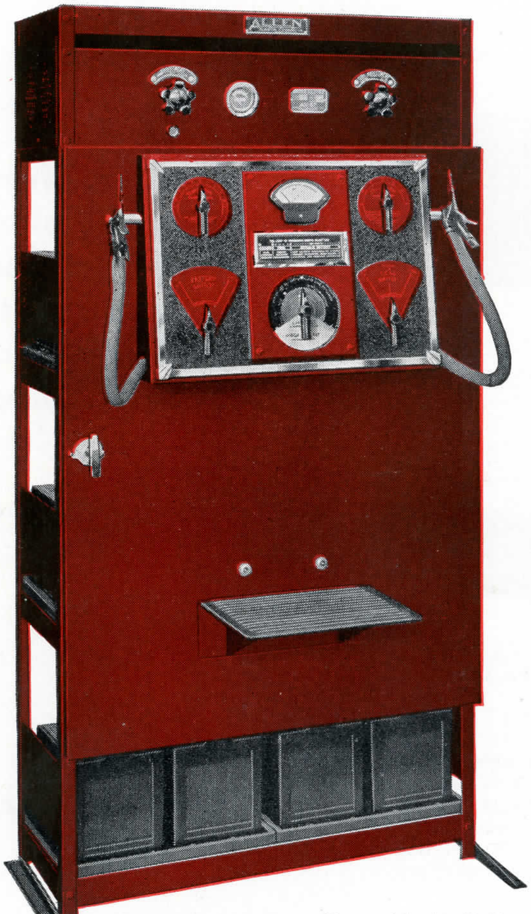
Specify exact voltage and cycle desired when ordering

Uses Type No. F-60 Unitron Bulb..........$4.00
Replaces Tungar No. 189049 or Rectigon No. 289416 bulb

Supersedes all Unitron pages printed previous to 9-15-38.

Allen Battery Shop

Model F-150, Space-Saving Combination



Model F-150 Battery Shop with 12 Battery Built-in Charger and E-143 Battery Analyzer
66″ High, 32″ Wide, 14″ Deep
Shipping weight, 297 lbs.

BATTERY CHARGER

BATTERY ANALYZER

SPACE SAVING RACK

BATTERY SHOP FEATURES

1. Twelve-battery charger inclosed in ventilated compartment at top of cabinet. Bulb accessible through door at end of compartment.
2. Door mounted full length on piano type hinges to prevent sagging.
3. Three shelves, each with a capacity for four batteries and equipped with removable rubber trays. Bottom shelf can be used for charging or for storage.
4. Lead connectors hold charging clips when not in use. Oil pockets lubricate charging clips.
5. Battery Analyzer and shelf to hold battery being tested are mounted on door. See description at top of page.

WITH MODEL E-143 BATTERY ANALYZER DETERMINES BATTERY LIFE

FEATURES

1. 3¾″ Moving Coil Meter with Chrome Case.
2. Bakelite Control Handles.
3. Battery Condition Card. Interprets readings into Per Cent of Useful Plate Life Remaining.
4. Temperature Regulator. Compensates for Solution Temperature effect on Capacity.
5. Battery Switch. Blades will not overheat.
6. Cell Switch. Enables Testing Each Cell Separately.
7. Plate Switch. Enables Accurate Tests on all Sizes of Batteries.
8. Test Plate. Position of Indicator when Meter Hand Balances on TEST LINE determines Battery Conditions.

CELL TESTERS

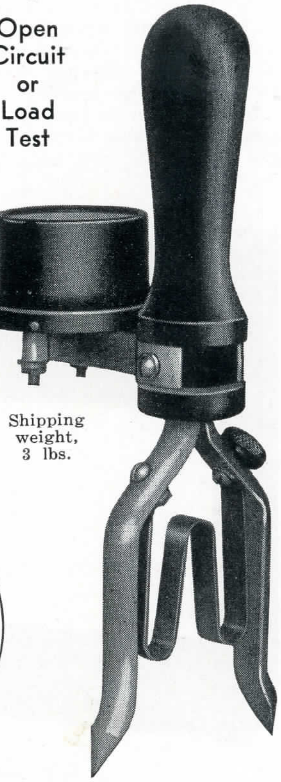
Models E-51 and E-51-B

DESCRIPTION

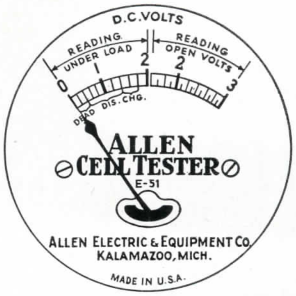
Both models of testers are equipped with 3″ meters, and the E-51 meter is so designed that it always reads in one direction, regardless of how the prods are placed on the battery cell. The cadmium plated prods are wide enough to reach across all types of cells and yet close enough to go through the NARROW OPENINGS IN FLOOR BOARDS.

Releasing the thumb nut on the side of the prods eliminates the shunt from the circuit so that an open circuit reading can be obtained while batteries are being charged, in order to determine when they are ready for removal from the charging line.

Open Circuit or Load Test



Shipping weight, 3 lbs.



Model E-51 is equipped with Fixed Coil Meter
Model E-51-B is equipped with Moving Coil Meter

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

Printed in U. S. A. 8-10-38

Supersedes all pages descriptive of above products printed previous to 8-10-38.

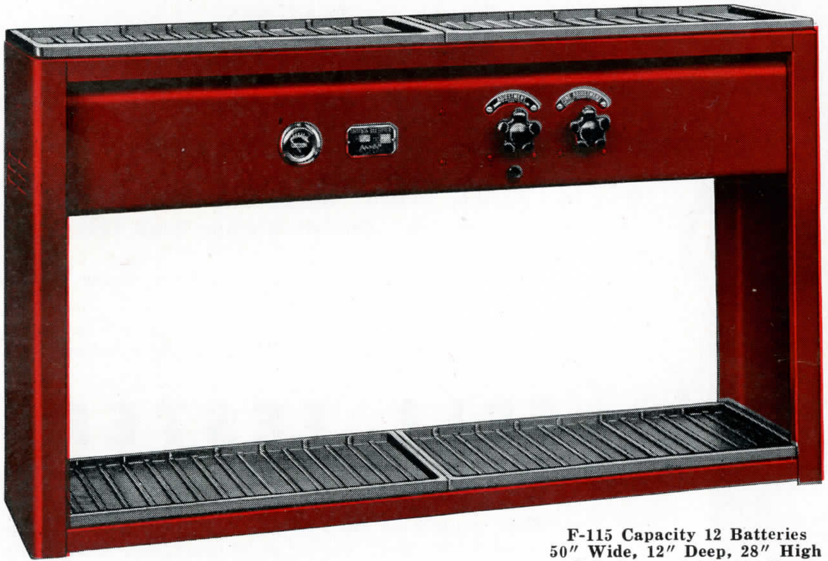
Allen Battery Shops

Space-Saving Combination of Rack and Charger

MODEL F-115
12 BATTERY CAPACITY

MODEL F-112
8 BATTERY CAPACITY

MODEL F-111
4 BATTERY CAPACITY



F-115 Capacity 12 Batteries
50″ Wide, 12″ Deep, 28″ High
Shipping weight, 141 lbs.

●

Twenty-four hours every day these efficient charging units will turn an idle corner into profit producing space —work while you sleep.

●

Sq. Ft. of Floor Space Required

F-115	4
F-112	3
F-111	1½

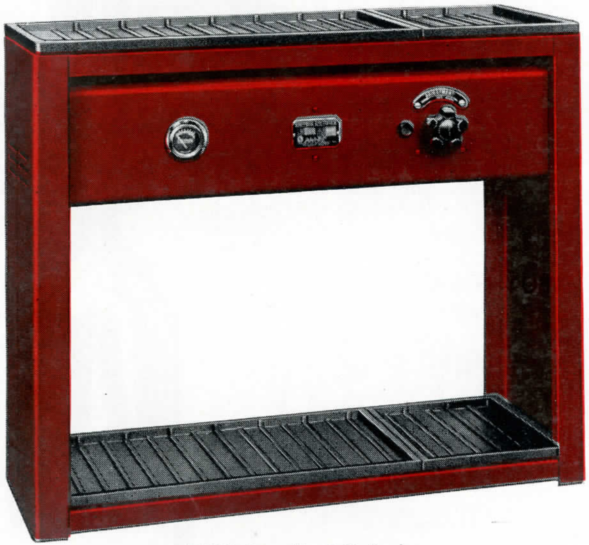
●

COMPACT
EFFICIENT
ECONOMICAL

●

SPECIFICATIONS

The shops are constructed of steel, bolted and welded together to form a strong compact unit. They are attractively finished in bright red lacquer. The charger is mounted in a fully enclosed case below the upper shelf. The molded rubber trays are held to the metal shelves by rubber dowels to prevent sliding from shelves. All units are completely assembled ready for use when received. Complete operating instructions are furnished with each shop.

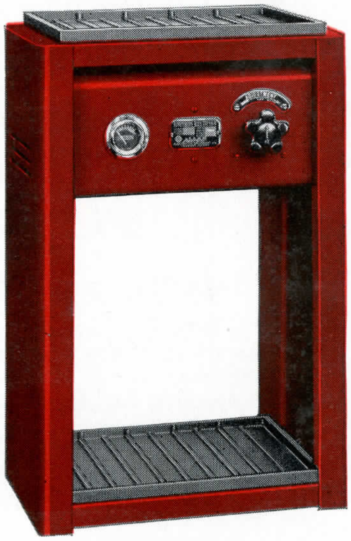


F-112 Capacity 8 Batteries
34″ Wide, 12″ Deep, 28″ High
Shipping weight, 82 lbs.

FEATURES

1. Removable rubber trays.
2. Fractional ampere control.
3. Doors at end of charging compartment.
4. Charging leads with clips.
5. Pin connectors furnished.
6. Large efficient transformer.
7. Accurate ammeter.
8. Six ampere bulb supplied.
9. Attractive and easy to operate.

Rubber Trays only, $1.65 each.



F-111 Capacity 4 Batteries
18¼″ Wide, 12″ Deep, 28″ High
Shipping weight, 55 lbs.

Allen Electric and Equipment Company

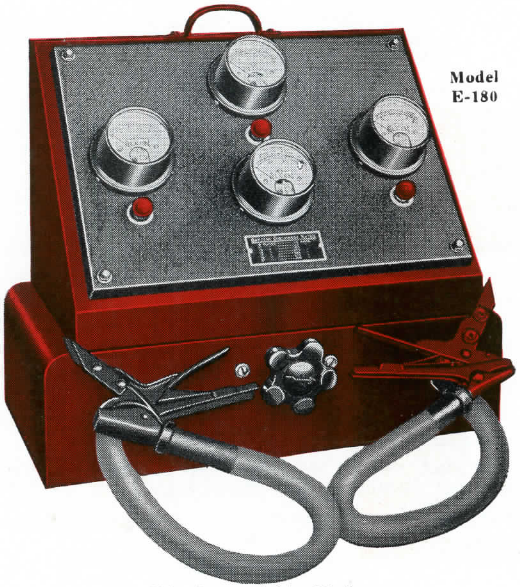
Kalamazoo, Michigan, U. S. A.

Printed in U. S. A. 8-10-38

Supersedes all pages descriptive of above products printed previous to 8-10-38.

Allen Battery Tester

PORTOSTAT
The Battery X-Ray



Shipping weight, 23 lbs.
Size 16″ High, 17″ Wide, 8½″ Deep

A BATTERY SALESMAN TO CONVINCE CAR OWNERS

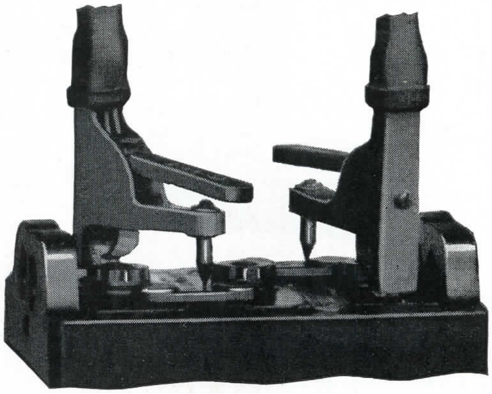
EQUIPPED WITH D'ARSONVAL TYPE MOVING COIL METERS

FEATURES

1. 3″ Moving Coil Meters. 0-300 Ammeter. Voltmeters 0-2.5. Also calibrated with words, "Dead," "Dis.," "Partly Chg.," and "Chg."
2. Panel set at an angle makes readings easy to see.
3. Allen Standard Carbon Pile.
4. Red metal case perforated to permit air circulation around the carbon pile.
5. Three Lamp Bulbs, one under each voltmeter, indicate battery cell condition.
6. Allen Volt-Amp Master Clips—quickly attached. Do not heat—carry all circuits simultaneously.

NEW STYLE VOLT-AMP MASTER CLIPS

Contact Exposed or Unexposed Cell Connectors



F-59. Volt-Amp Clips have 21″ leads and are used on all Allen Testers.

Special Length Leads can be furnished.

The opposite illustration shows the E-180 Portostat mounted on a stand which is designed so that the tester can be removed.

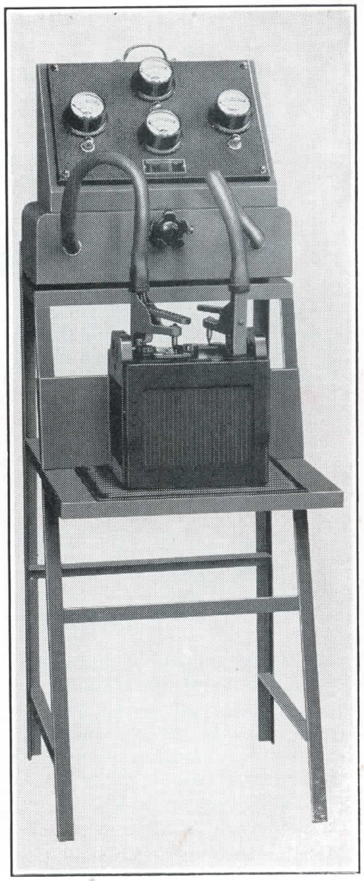
The frame of the stand is angular construction, welded at all joints for rigidity and strength. A shelf equipped with a rubber mat is provided to hold the battery while being tested.

The entire unit occupies only 2½ sq. ft. of floor space and makes an ideal assembly to be used in conjunction with the F-111, F-112, and F-115 Battery Shops.

BUY NOW!

The E-180 or E-181 saves current that is otherwise consumed in trying to charge defective batteries, also reduces rental battery inventory, as many times a new battery can be sold instead of using a rental.

E-181 is with Stand.
E-182 is the Stand Only.



Shipping weight, 82 lbs.
Size 50″ High, 17″ Wide, 21″ Deep

Allen Electric and Equipment Company
Kalamazoo, Michigan, U. S. A.

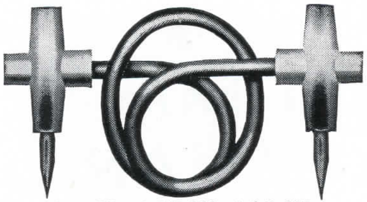
Printed in U.S.A. 11-20-36

Supersedes all pages descriptive of Portostats and Paneltest printed previous to 11-20-36.

Battery Service Equipment

F-14 Allen Shuro Connector

Positive Contact



Pat. No. 1,747,268—1,641,837

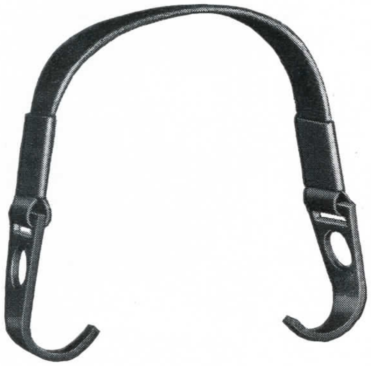
FEATURES

1. Lead head to hammer on—absorbs blows.
2. Lead plated pin of acid resisting steel.
3. Positive electrical connection of pin to wire.
4. Sharp point of plated alloy pin penetrates post, making perfect electrical connection.
5. Perfect connections eliminates loss of power, lost charging time and danger of flash-backs.
6. Wire and rubber molded in lead to form seal, preventing acid from attacking wire.
7. Ears on pin prevent turning in lead casting.
8. Wing-shaped to allow easy removal of pin from post.
9. Use "Allen Shuros" to eliminate trouble in charging. They are better.

Shipping weight, 2 lbs. per box of 10

E-99 Battery Carrier

Four-Way Tool



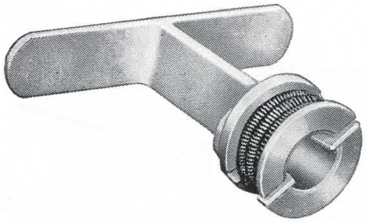
FEATURES

1. Carries all types of batteries and removes them from the most inaccessible mountings.
2. Hooks designed so they can be placed over the battery posts, under the cell connectors, through the battery handles, or under the finger ledges on the ends of the battery case.
3. Hooks swivel in metal clamps, preventing wear on rubberized fabric straps.
4. Metal clamps are pressed tightly into rubberized fabric and cannot become loose. Length of hooks and clamp also prevents rubberized fabric from coming into contact with acid on top of battery.
5. All metal parts cadmium plated and painted.
6. Holes in the hooks fit battery posts tightly and will not slip.

Packed 10 in a box. Shipping weight, 4½ lbs.

E-79 Battery Post Cleaner

Time Saver   Removes Corrosion



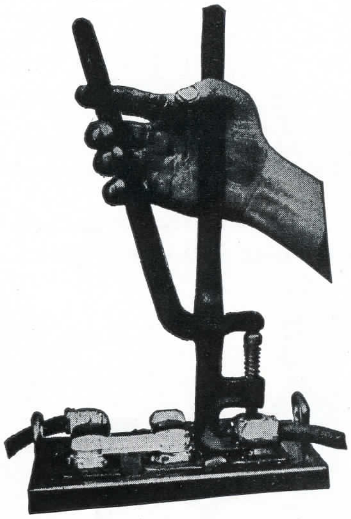
FEATURES

1. Postive cleaning action; removes all corrosion.
2. Saves time. Requires approximately one minute to clean post. Eliminates use of a wire brush.
3. Two full floating, hardened steel blades held in place by circular steel spring, have equal and constant pressure against posts. Spring allows blades to fit any post.
4. Handle and blade holder cast in one piece and cadmium plated.
5. Compact design permits use on most batteries without removing the floor boards.
6. Grip handle designed to fit hand and to allow good leverage.
7. Replacement of blades is seldom required but is easily made if necessary.

Shipping weight, 2 lbs.

F-13 Terminal Remover

Saves Time and Labor Removing Batteries



FEATURES

1. For all clamp type terminals.
2. Malleable casting. Handles will not bend.
3. Jaws can be used under cable and terminal bolt when terminal is flush with cover.
4. Pressure of plunger is straight down. No side action. No broken covers.
5. Easily and quickly removes the tightest of corroded terminals.
6. Best tool for its job obtainable.

A TERMINAL IS NEVER SO TIGHT IT CANNOT BE PULLED WITH THE ALLEN REMOVER.

Shipping weight, 3 lbs.

Printed in U.S.A. 11-20-36

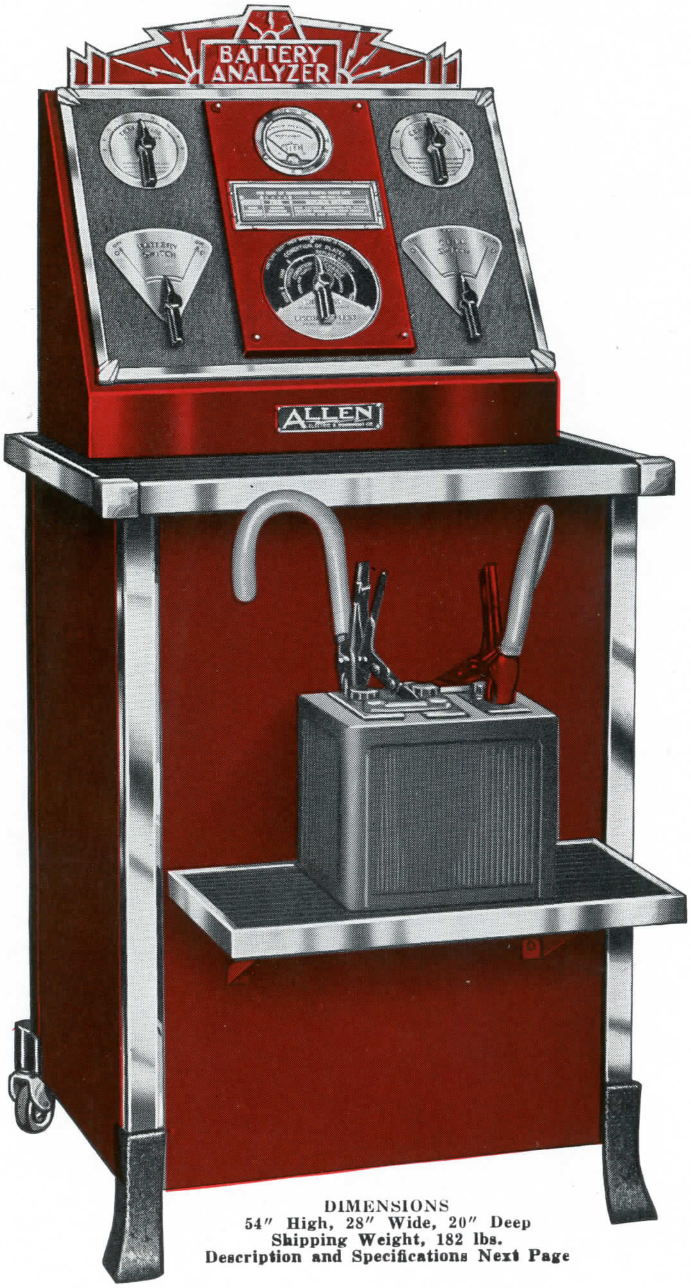
Supersedes all pages descriptive of above products printed previous to 11-20-36.

THE NEW ALLEN

BATTERY ANALYZER

Determines Per Cent of Useful Plate Life Remaining

MODEL E-142



DIMENSIONS
54″ High, 28″ Wide, 20″ Deep
Shipping Weight, 182 lbs.
Description and Specifications Next Page

●

A SUPER SALESMAN FOR NEW BATTERIES

●

IMPRESSIVE
UNDERSTANDABLE
EASY TO OPERATE

●

TELLS THE TRUTH
ABOUT BATTERY PLATES

●

TWO TESTS

1. **CONDITION OF CHARGE**
   Made upon removal of battery from the car. Determines cell condition "Charged," "Discharged" or "Dead".
2. **CONDITION OF PLATES**
   Made after battery has been recharged. Determines Per Cent of Useful Plate Life Remaining.

●

FEATURES

1. One Moving Coil Meter (with balance line).
2. Chrome Plated Etched Plates.
3. Adjustment for Battery Temperature.
4. Adjustment for Plates Per Cell.
5. Tests Each Cell Individually.
6. Volt-Amp Clips.
7. Rubber Covered Battery Test Shelf.
8. Two Tone Test Panel, Chrome Trim.
9. Sheet Steel Cabinet, Rear Wheels.
10. Legs on Front, Prevent Tipping.

●

BUY ON ALLEN'S
BUDGET PLAN

Sell Batteries As You Do Tires--
Before Road Failure Occurs!

Allen Electric and Equipment Company

Kalamazoo, Michigan, U. S. A.

BENCH TYPE BATTERY ANALYZER

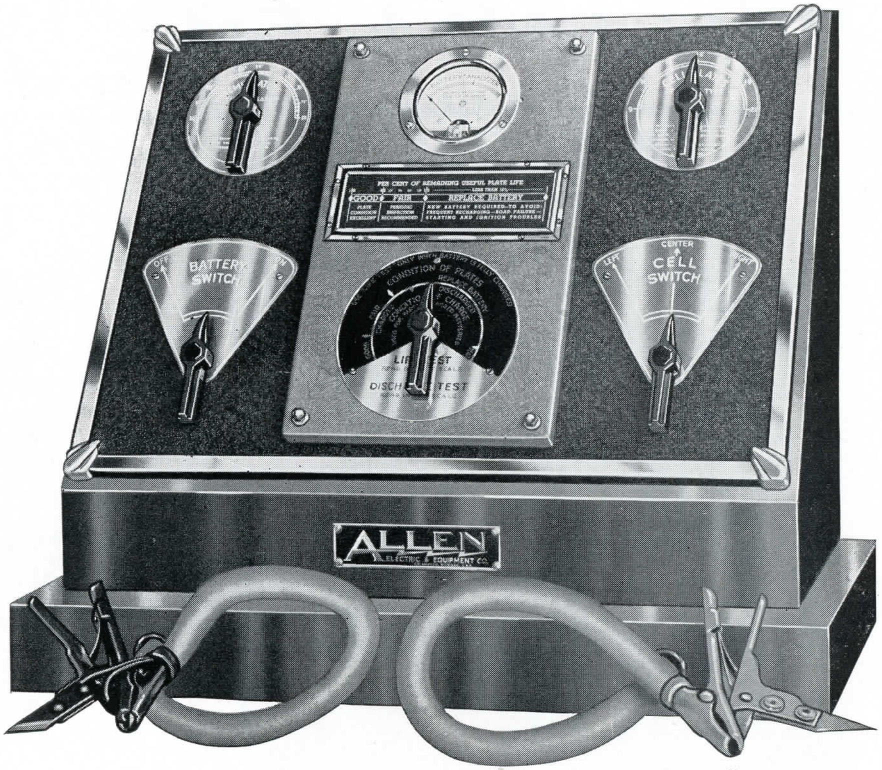
MODEL E-143

With Casting Mounted at Top, same as E-142, $4.00 Additional

HOW TO OPERATE

1. Connect volt-amp clips to battery.
2. Set temperature regulator to correspond to battery solution temperature. (In warm weather, set and leave at 80° mark).
3. Set battery plate switch to correspond to number of plates per cell.
4. Place cell switch on left cell position.
5. Place battery switch at "on" position.
6. Move condition of plates indicator until meter hand is balanced on test line.
7. Pointer of indicator on condition of plate scale will disclose condition of the left battery cell.
8. Repeat test for remaining cells by moving cell switch.

THE BATTERY MUST BE FULLY CHARGED WHEN LIFE TEST (CAPACITY) IS MADE.



Dimensions: 19″ High, 24″ Wide, 12″ Deep. Shipping Weight, 62 lbs.

SPECIFICATIONS

1. 3¾″ Moving Coil Meter with Chrome Case.
2. Bakelite Control Handles.
3. Battery Condition Card. Interprets readings into Per Cent of Useful Plate Life Remaining.
4. Temperature Regulator. Compensates for Solution Temperature effect on Capacity.
5. Battery Switch. Blades will not overheat.
6. Cell Switch. Enables Testing Each Cell Separately.
7. Plate Switch. Enables Accurate Tests on all Sizes of Batteries.
8. Test Plate. Position of Indicator when Meter Hand Balances on TEST LINE determines Battery Condition.
9. Steel Cabinet Trimmed with Chrome. Bright Red Finish.

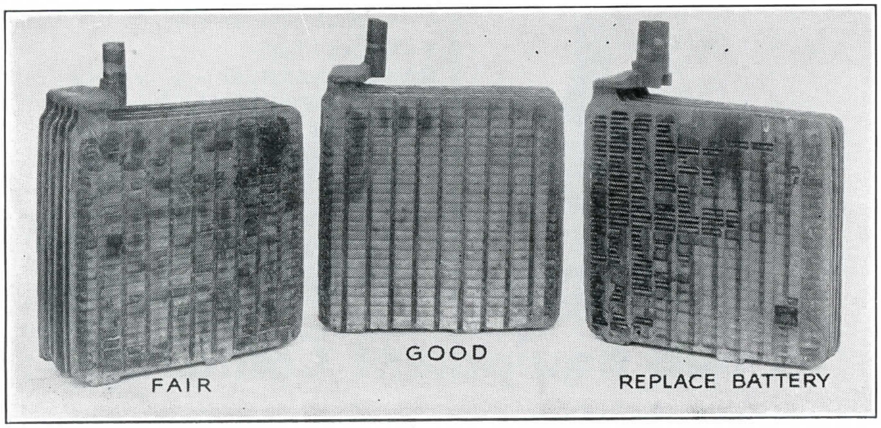
PURPOSE OF THE BATTERY ANALYZER

The Battery Analyzer is an entirely new method of testing batteries in order to determine the per cent of useful life remaining in the plates. It also discloses other troubles that affect battery capacity.

With it alert dealers can show the reason for purchasing a new battery before actual road failure occurs. Very few owners will take a chance with batteries any more than they do with tires when they see the tread becoming worn.

The "Condition of Charge" test discloses whether any of the cells are shorted at the time the battery is removed from the car, or if they need recharging only.

The "Condition of Plates" test made after the battery has been recharged discloses the wear that has occurred on the plates (shedding), and a new battery should be recommended when the per cent of life remaining is fifteen or less.



THE ANALYZER DETERMINES CONDITION OF THE PLATES

The battery, from which the three positive groups, shown in the unretouched reproduction at the left, were removed, responded satisfactorily to recharging and was functioning perfectly for both starting and ignition requirements.

The Analyzer readings were as shown under each group. This discloses how the tester determines impending battery failure.

The Allen Analyzer saves car owners the annoyance and inconvenience of battery road failure and the expense of frequent recharging.

ALLEN UNITRON BULBS

For All Makes and Types of Chargers

GUARANTEED
TWELVE HUNDRED
BURNING HOURS

◆

UNITRON BULBS are built to quality standards under the careful supervision of engineers trained through years of experience in the development of gas filled tubes. Only the most modern practices and methods are used in the manufacturing process, many of which principles were originated and perfected in the Unitron Bulb laboratories.

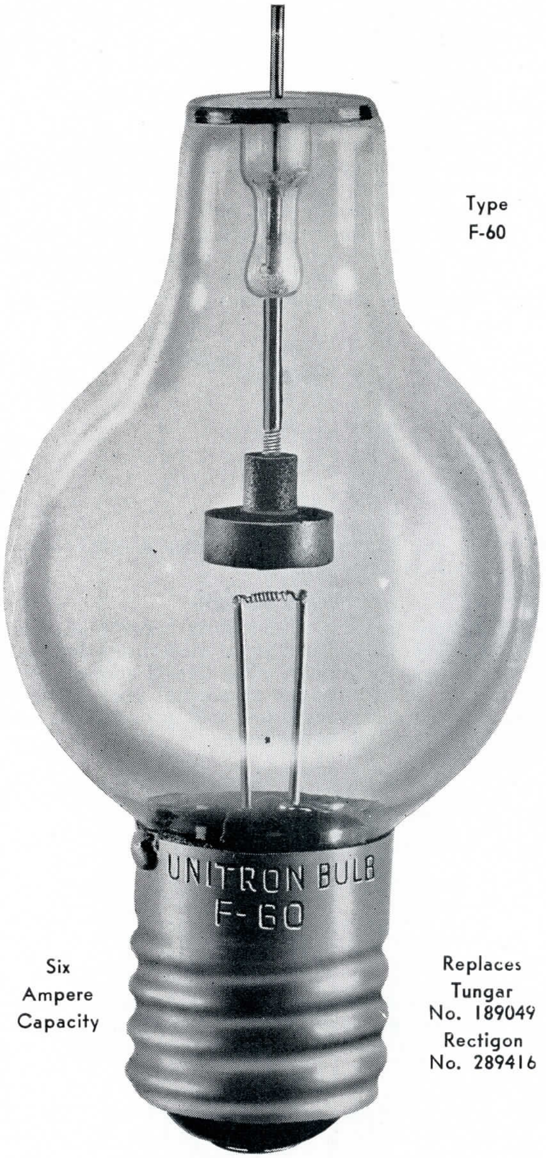
Each bulb is thoroughly tested through a process that duplicates actual service conditions so that the purchaser is assured of uniform operating characteristics and long life.

It is these exhaustive tests that make possible the 1200 HOUR GUARANTEE, and usually bulbs that operate satisfactorily throughout the warranty period will continue to render service for several THOUSAND ADDITIONAL HOURS.

◆

In effect, a Unitron bulb is an electrical check valve which permits current to flow through it in one direction only.

Inside the bulb is a filament of coiled wire called the cathode, and a graphite plate, called the anode, and the bulb is filled with argon gas. To operate, the filament is heated by current from a special winding on the charger transformer, and the combination of the hot filament and argon gas produces the valve action, in that the positive half cycle is allowed to flow from the graphite plate to the filament,—charging the battery, while the negative half cycle is suppressed and prevented from flowing. Therefore, under normal conditions only direct current flows through the circuit.

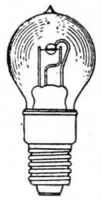


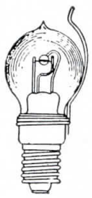
Type
F-60

Six
Ampere
Capacity

Replaces
Tungar
No. 189049
Rectigon
No. 289416

TYPE
F-2
2 Ampere
Replaces
Tungar
No. 277465





TYPE
F-1
2 Ampere
Replaces
Tungar
No. 195528
Rectigon
No. 289415

PACKED IN INDIVIDUAL CARTONS
PACKAGED IN LOTS OF 12 AND 24
Shipping Weights
Lots of 12—6 lbs. Lots of 24—12 lbs.
Single Bulbs—3 lbs.

SEE OTHER SIDE FOR BULB ADJUSTMENT INFORMATION

Allen Electric and Equipment Company
Kalamazoo, Michigan, U. S. A.

Supersedes all pages descriptive of Unitron Bulbs printed previous to 11-20-36.

BULB ADJUSTMENT INFORMATION

FLASH BACK

When charging a full line of 12 batteries, the back pressure voltage approaches the limit of the bulb's check valve action, and unusual disturbances, such as explained under "Causes of Flash Back", sometimes create an arc from the filament to the graphite plate, which causes the damage as shown in Fig. No 1.

CAUSES OF FLASH BACK

A. Disturbances on the a. c. supply side.
  1. A sudden shut off of the a. c. supply at the power house, or
  2. Shutting off the a. c. supply by a switch in the supply line, or
  3. A sudden voltage surge due to lightning storm, or other electrical interference.
  4. A smaller fuse in the a. c. side than in the d. c. side which on overload, permits the a. c. side to open first.

B. Disturbances on the d. c. side.
  1. When the charging leads are reversed; that is, the positive lead of the charger connected to the negative post of the line of batteries.
  2. When the charging rate is too high.

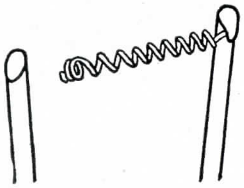


Figure No. 1

There is no adjustment on bulbs destroyed by a Flash Back or burnout.

OVERLOADS

When a bulb is used at charging rates higher than 6 amperes, its life is shortened materially due to the filament sagging rapidly. Fig. No. 2 shows the sag that occurs in 1500 hours of normal use. Charging rates in excess of 6 amperes will produce the same amount of sag in a lesser time.

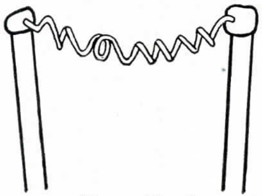


Figure No. 2

There is no adjustment on bulbs having a filament sag as great as shown in Fig. No. 2, as either the bulb has given its full useful life or has been overloaded.

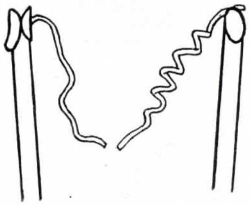


Figure No. 3

Figure No. 3 shows over 4000 hours of operation.

AIR LEAK - DEFECTIVE GAS

Fig. No. 4 shows a bulb which has an air leak or defective gas content which is disclosed by a white coating on the graphite plate.

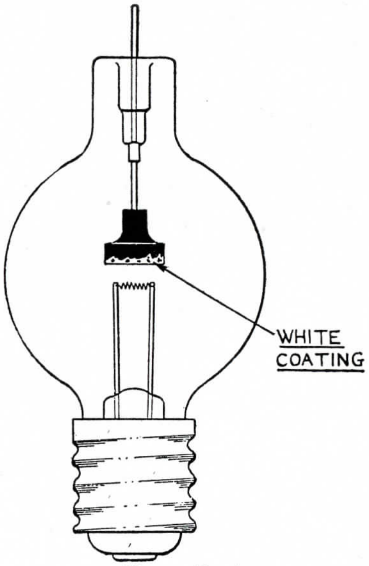


Figure No. 4

If a bulb is as is shown in Fig. No. 4, and the filament does not have any appreciable sag and the glass is not broken, an adjustment is due.

BROKEN GLASS

Bulbs with broken glass are not subject to adjustment, as claim should be filed with the carrier.

PROCEDURE IN MAKING ADJUSTMENTS

1. The adjustment tag, which is one side of the Unitron Bulb carton, must be properly filled out and accompany the bulb on which an adjustment is being requested.
2. The bulb with the tag must be returned to a Unitron Bulb distributor, and preferably to the one from whom it was purchased.
3. The distributor will examine the bulb by holding it in front of a 100 watt lamp, noting the condition of the filament.
4. The distributor is to be guided in determining whether or not an adjustment is due by the information on this page.
5. If the bulb has failed in the warranty period, the distributor is authorized to make free replacement. All bulbs so adjusted are to be held for inspection by an Allen representative.
6. Following the inspection the bulbs will be destroyed, and replacement will be made upon receipt of the "Warranty Tags".

ALLEN
EQUIPMENT